



COAL AGE



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No. 6

Guaranteed Efficiency

WHEN a mine operator sends out general inquiries these days asking for proposals on a mine fan, hoisting engine, mining machine, boiler, centrifugal pump or any other kind of equipment, he is sure to receive a miscellaneous lot of propositions, each one of which emphasizes two things—price and guaranteed efficiency.

There was a time not long ago when first cost was the only consideration that made any impression on the prospective buyer, but now most mining men consider guaranteed efficiency to be the important part of the proposal. In fact this idea has so permeated mining brains that most managers are willing to take a chance on any kind of new equipment if only the guaranteed efficiency is sufficiently promising.

Since buyers are willing to take chances, it follows naturally that manufacturers are going to give them the opportunity, at least some of them are, and that is the explanation for some of the queer guarantees we run across these days.

Here is the way one manufacturer justifies himself:

If engineers will consider nothing but efficiency, we manufacturers must either get the orders on an efficiency basis or get out of business. We prefer to be conservative in our guarantees, but we have little choice in the matter.

The blame for this unfortunate state of affairs is pretty evenly divided between the manufacturers and the mining men who buy their products. The first have been led astray by their sales force, and the second by incompetent engineers.

When salesmen who knew nothing about the machines they were exploiting were in vogue, price was the criterion that was always led up to, but gradually engineers took a hand in the game and they began to call attention to efficiency. Now

THIS CONDITION *can be improved only by a better understanding between all those concerned. When managers of mines see that they receive from their engineers accurate and detailed summaries of results, manufacturers will take care that their salesmen promise only what their machinery will perform.*

efficiency criterions are all right, if competent men handle the argument and final decision is based on the economic ratio of operating expense to work performed; but if every Tom, Dick and Harry has a hand in the tabulations and comparisons, efficiency loses its meaning.

Lazy salesmen have found that the quickest way to interest a buyer is to talk efficiency, and would-be engineers have discovered that it is easier to take a salesman's word for efficiencies than to arrive at them by computation.

If any reader believes that we exaggerate the importance of the subject, let him look around and see how many machines he can find on which payments are being withheld pending fulfillment of efficiency guarantees. Of course in the end the manufacturer is liable to have his machine returned if he can't make good; still the prospective buyer has been put to endless trouble and much expense. If the purchaser lacks engineers competent to make the test (which very often happens), he stands a chance of paying for something he does not receive.

Ideas and Suggestions

A Home-Made Car-Door Lifter

The accompanying illustration represents a home-made device for lifting the end gates of mine cars while passing over crossover dumps. This apparatus has been developed by M. M. Haley, of Sturgis, Ky., and is used by the West Kentucky Coal Co.

This end-gate lifter is entirely automatic in its operation. A loaded car in approaching the dump comes in contact with the horizontal lever *A*, which turns upon the vertical pivot *B*. Motion is thus transmitted through the adjustable rod *C* to the horizontal lever *D*, which turns on the vertical pivot *E*. This lever at its inner end carries

As will be seen from the foregoing, the operation of this device is entirely automatic and requires no care or attention on the part of the dumpman. Considerable time usually consumed in hooking and unhooking the door-lifting chain or other similar device is thus saved.

A Cost Limit Needed

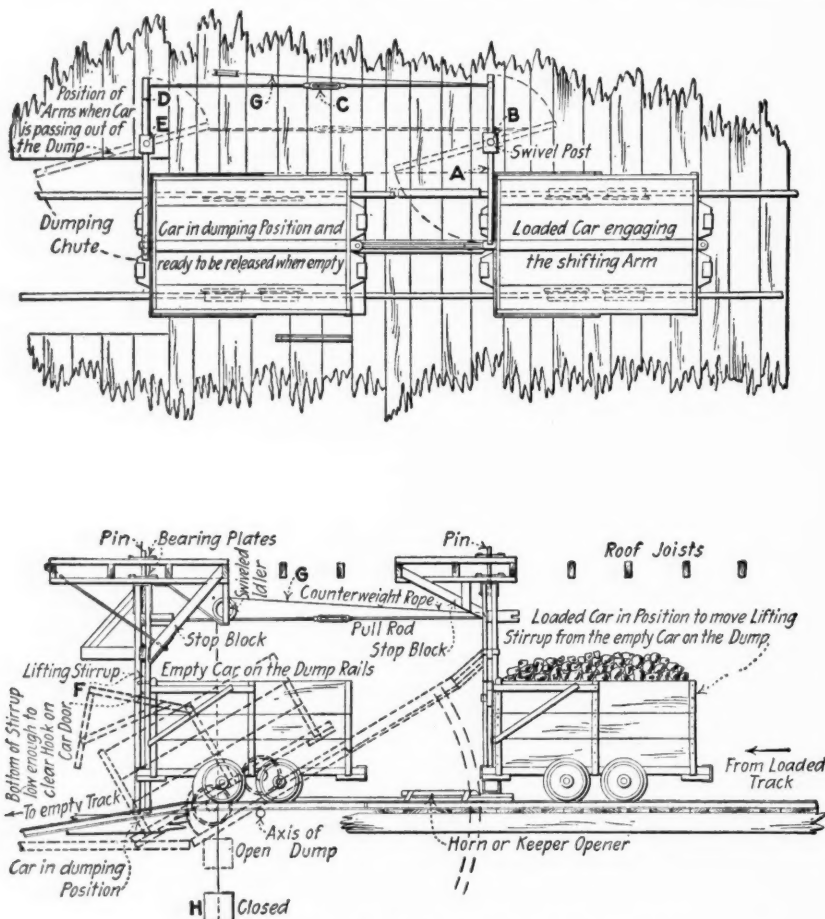
There is one common problem repeatedly confronting the mine foreman that merits for each particular property a deeper analysis and a more definite understanding than it generally receives. This is the problem of the "high cost" coal. In all mines a certain part of the coal

produced costs more per ton for extraction than the average output of the whole property. This may be either pillar coal and stumps or certain districts or areas where for one reason or another extraction at the face increases in cost. The question of whether such coal warrants extraction must generally be settled promptly one way or another by someone with authority to make such a decision.

It is a rare property indeed where the mine foreman, the superintendent or engineer can sit down and figure it out with a lead pencil and a piece of paper. The elements that enter into the problem are complex. Frequently certain of the most important factors are known only at the head office. Many years of ripe experience, together with careful consideration of the effects upon the cost, may prevent any serious errors of judgment, but the lack of any definite knowledge of when to stop or when to go on is undoubtedly losing many tons of good coal today that would represent a fair profit if only the facts were known.

There are a great many other items chargeable against any high-cost coal than those entering into the bare cost of its extraction at the face. These are borne by such coal whether or not it is finally mined. Thus, it is quite apparent to any mine foreman that he can afford to spend more money on his pillars and

stumps than on his room coal. The entries tapping this coal have been driven, and the yardage has been paid. His track and many switches are already in. His ventilation has been paid for, as have his timbering, piping, wiring, etc. It stands to reason, therefore, that he can spend a few cents more per ton on this coal and still put it on the parting at a profit. That is generally as far as his analysis of the situation goes. But the limit to which such extra cost may extend is a matter for his good judgment, backed by mature experience.



PLAN AND SIDE VIEW OF THE DOOR LIFTER

a stirrup *F*, which engages the hook on the car end gate. As the car is dumped, this stirrup lifts the end gate, the arm revolving slightly during the process.

Upon the car and dump righting themselves after the former is emptied, the counterweight *H*, acting through the cable *G*, returns the lever *D* to its normal position. Another car approaching the dump and striking the lever *A* revolves the lever *D*, carrying the stirrup *F* to such a position as to clear the empty car as it is bumped off the dump by the loaded one.

If for no other reason, dislike for waste and respect for the principles of conservation should prompt the maximum economic recovery in every property. It might be stated that the maximum economic recovery for any property is that percentage of extraction which yields finally the best returns on the property. This may be only 25 per cent. or 50 per cent. or up to 95 per cent.

That the maximum economic extraction of a property may be between 25 and 50 per cent. is not the fault of the operator. Conditions may necessarily make it the case. The fault, which is a grievous one, lies with the customs and the times and a short-sighted state. It is conceivable, however, that a property might return as much money finally on a 70 per cent. as on an 80 per cent. extraction. Here then is 10 per cent. of the available tonnage that may be extracted at no loss, but likewise at no gain. And it is the mine foreman who must always decide whether this coal should be removed or left.

The maximum economic extraction of a certain property may be easily 75 per cent. Suppose that for certain reasons the extraction of worked-out territory averages 50 per cent. Is this 25 per cent. that is lost a figure that should interest the operators, the stockholders, the retailers, the consumers and the state? It very plainly is. These certain reasons mentioned may not be under the control of the mine operator or his management. They may be due to market conditions or poor financing or other causes. But on the other hand a large portion of this lost 25 per cent. may be chargeable to poor management and bad reckoning on the part of the officials.

This article wishes to call attention to the fact that too many mines are operated on the "month by month" principle. Given certain market conditions, certain fixed operating charges, a developed area of coal and, from experience, a standard operating cost for "straight" worked coal, a figure can be determined which approximates the allowable extra cost on any given tonnage of pillar, stump or other high-cost coal for maximum economic recovery.

In a properly arranged cost-accounting distributive system where daily knowledge of operations is obtained, such a figure would be a means of an intelligent determination of that doubtful problem of the excess-cost coal. Coupled to the foreman's experience and knowledge of his ground, it would at least be an attempt to realize the figure which represents the maximum economic extraction for the property in question.

These are not academic theories. In common with other modern practices modern mine accounting seeks to place in the hands of the management the knowledge of all the standards and limits of cost that serve to curb the twin evils of guesswork and waste. There is coming in coal mining, as has already occurred in other industries, a time when the acceptance and practice of all such aids will be as necessary to success as a proper knowledge of engineering is today.

A Medical Man on Safety First

Some recent issues of *Coal Age* containing reports and comments regarding accident ratios have interested me exceedingly. The figures for one district with which I am familiar concerning the causes of death are outrageous and are even more so for those injured. The idea of so many men being injured and killed in this district in one year, without an explosion or fire or other general

calamity, is purely ridiculous. It is not the fault of the companies, or very rarely so, except in so far as they do not educate their men nor forbid the use of alcohol during the working week.

I hesitate to think of the many accidents that I as a physician know are the result of alcohol and still more of the number I think are caused by the same. And most of the rest are caused by ignorance and the foreigner's lust after our great American dollar. The mark, krone, franc, lira and ruble become insignificant to these men who come from the peasant class in Europe.

The miners and operators and legislators should combine to force every miner and mine man to be well trained in safety first and first aid and rescue work. One glaring fact (and it is a fact) remains, and that is that 98 per cent. of the accidents in coal mines are easily preventable; also the facts that they are morally, economically and shamefully expensive in every other way. Permit me to cite an example:

A few days ago a foreign miner had his right thigh broken into six pieces and a fracture of the femur about 4 in. above the knee. The man had been drunk the night before and was known to be still under the influence when he went into the mine that morning. Also the shotfirer of his territory had warned him to "pull down" the piece of top coal that caused the injury, but he had, as is the rule with drunken men, an idea that he knew best. Again, this fracture was compounded (made an open wound and exceedingly dangerous) by ignorant handling in the mine. Had he been properly handled the fracture would have been a simple one; he was not, and one of the bone fragments forced its way through the skin.

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War and Prohibition

BY GEORGE N. LANTZ*

Does it appear strange to the readers of *Coal Age* that after physicians and surgeons had told of the effects of alcohol on body and brain, after ministers and moralists had pointed out the evils of liquor in the moral and spiritual sense, after economists and business men had shown the tendency of liquor to lower efficiency in the business and industrial world, war should accomplish prohibition in Russia, partial prohibition in France and Germany and voluntary temperance among a large number of Englishmen?

War and prohibition! And why?

Because war requires efficiency, strength, endurance, courage, skill. War demands clean limbs and clean minds. And all of these are impaired by alcohol.

The labor of peace, no less than the work of war, is in need of the same qualities which war demands in its participants. The state, the community, the home need vigorous, healthy, upstanding men. Industry needs clean muscles and clear brains. Mining, because the work is hazardous and the labor hard, needs sober men.

And alcohol will dull our faculties, steal our strength, sap our vigor, undermine our courage and kill our efficiency. It will destroy our pride in our work, cause us to neglect precautions for safety, increase our chances of injury, and jeopardize, through the drinker, the lives of his fellow workmen.

Why wait for war?

*New Straitsville, Ohio.

The Storage of Coal--III

BY JOHN B. C. KERSHAW*

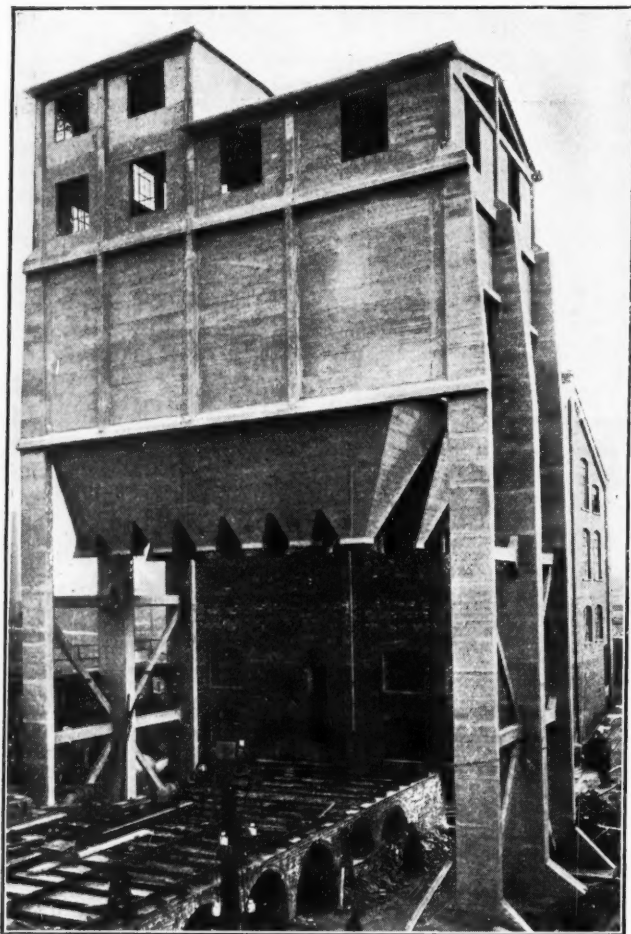
SYNOPSIS—Advantages of storing coal under sea water. Cost of one complete plant. Methods that are dangerous. Reinforced concrete superior to wooden construction. Increased ventilation not recommended as a preventive of heating.

The storing of coal under water has been shown by the investigations described in the preceding articles to be the only method of storage that absolutely fulfills the required conditions for preventing deterioration, and since chlorine and common salt have been found by laboratory trials to improve the calorific value of coal, immersion in sea water is certainly the best method of storing coal for any lengthy period.

Owing to the difficulty of arranging for storage places at or below high-water mark and to the great costs of erection and maintenance of storage tanks in such places,

coal, which was run-of-mine, was stored under water in concrete tanks of considerable capacity—10,000 tons—and when required for use was taken out with a grab and allowed to drain for a few hours, before passing to the chain-grate stokers by which the boilers were fired. The cost of handling the coal, it is stated, did not exceed that involved by an open-air stock heap.

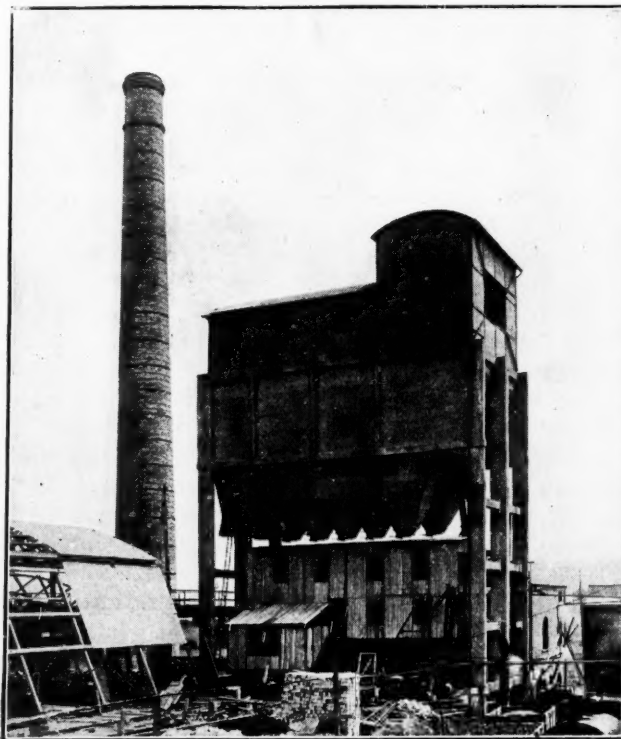
A novel coal transport and storage plant which involves the application of the storage-under-water principle has



CONCRETE COAL HOPPERS FOR KOPPERS OVENS

subaqueous storage has not been widely adopted, and it is doubtful if many large users of fuel in the United States, excepting the Navy, have made use of this system of storage. One large manufacturing firm, the Western Electrical Co., of Chicago, has employed the method with Illinois coal and has found the plan satisfactory. The

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COAL BUNKERS AT OUGHTERSIDE, CUMBERLAND, ENGLAND, OF REINFORCED CONCRETE

been designed by the engineer and manager of the electricity supply department of the Metropolitan Borough of Hammersmith, London.

According to the details of the scheme given in the *London Times*, the fuel has to be transported a distance of 600 yd. from the barges in the Thames to the electricity generating station. By the existing methods this transfer costs 14.05c. per ton. The new plan will make use of hydraulic power for transport work, and the coal will first be lifted out of the barges by a Priestman grab and delivered to an automatic weighing machine. Thence it will pass into a hopper, and from the hopper it will be automatically fed into a suction tank by a centrifugal suction dredger pump. This suction tank will also be fed with water, either from the main circulating water delivery pipe to the station or from the return pipe from the coal tanks.

The dredger pump will deliver a mixture of coal and water to the pipe line (15 per cent. of the total volume being coal), maintained at a velocity of 7 ft. per sec. in the pipe. From this pipe the mixture of coal and water will be delivered to an auxiliary coal tank, and if

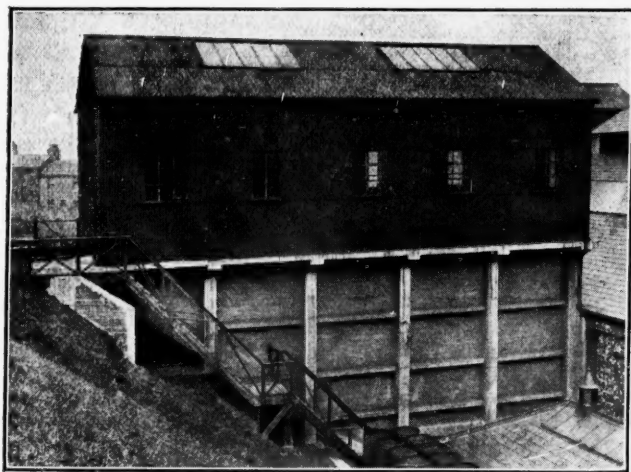
desired to the main storage tank. At both tanks, pumps for returning the surplus water by means of the return pipe to the wharf will be provided. To take the coal from the acceptance tank to the coal bunkers a coal-handling plant will be required, but this will be of the ordinary mechanical type.

The estimated cost of the five storage tanks which it is proposed to install is \$36,960, and of a 6½-in. double steel pipe line and pumping plant, \$9,600; while the estimated cost of coal transport by this new system and plant works out to less than 2c. per ton.

With systems of open-air storage the general practice of railways and gas companies is to limit the height of the stacks of coal to 20 ft. in the open air, and preferably to keep it down to 16 ft. Lump, nut and fines should be well mixed before stacking, but coal from different seams should not be mixed on the stock heap.

Stacking in cone formation from an overhead conveyor is bad, since this method causes the fines to accumulate in one place and produces greater danger of firing.

Temperature records of the coal stack should be kept, and if this rises to 90 deg. F. the top layers of the coal should be removed and any overheated or fired coal should be dug out and used. The simplest method for ascertaining the temperature of a coal heap is to employ a set of hollow rods, each 5 ft. in length, with screw couplings. The end one of the series is pointed. This pointed rod is pushed down into the heap, and one or more of the others is coupled to it until the desired depth is reached. After remaining in this position for 10 minutes the rods are withdrawn, and the temperature of the coal at the point reached is judged by holding the pointed rod in the hand. An experienced man can tell by the feel of the



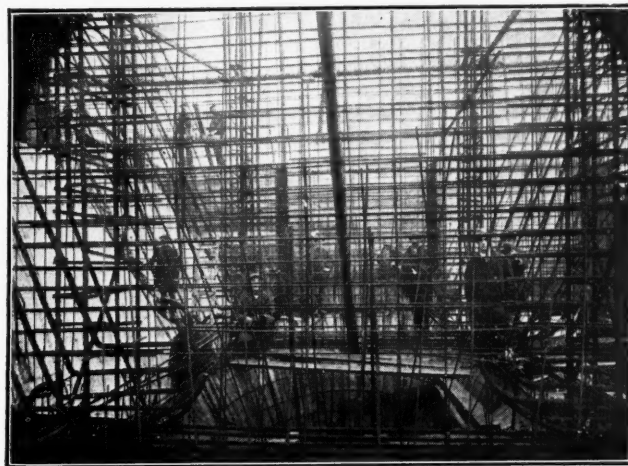
COAL BUNKERS AT A GAS WORKS

rod when the stock heap is dangerously heated, but if a more exact test is required, a steel pointed tube containing a recording thermometer may be pushed down to the place indicated by this preliminary test for overheating.

Freshly mined coal is more liable to heat than coal that has been raised for some time (for the reasons given in the section published Jan. 22), and freshly mined coal is also at a higher temperature than the outside air—another factor that favors heating when stacked.

As an example of a large open-air storage heap that of the Worcester Consolidated Street Railway Co. may be described. This storage place is 300 ft. long and 100 ft. wide and is capable of holding about 15,000 tons of coal.

The ground is fenced in with 2-in. planking, 10 ft. high, bolted and stayed together. A tunnel is constructed with timber and steel plates; along the center of the area, capable of receiving small industrial cars running on rails; and at suitable intervals openings, which can



COAL HOPPERS UNDER CONSTRUCTION

be closed by sliding doors, are provided in the roof of this tunnel.

The coal is piled over this tunnel to a height of 20 ft. by a traveling crane 45 ft. in height, operated by one railway motor type G.E. 1,200. The crane can unload three cars per hour, and soft coal is piled at one end of the heap, or tunnel, and anthracite screenings at the other. A miniature railroad runs the entire length inside the tunnel. The coal trimmers push steel cars into the tunnel as far as the appropriate chute, fill the car and push it back into the boiler room. As they enter the boiler room the cars are put on a platform scale, where they are weighed and a record is made of their contents. The cars are also counted, by the ingenious device of putting in service an old car register. Two of these are used—one for anthracite screenings and one for soft coal.

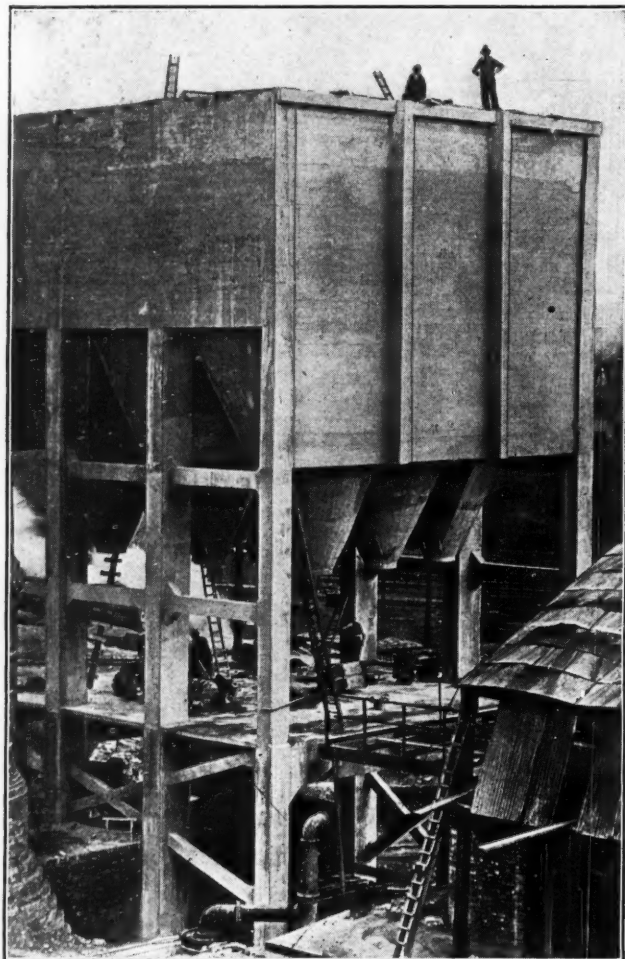
Nonmechanical types of open stock heap are not in favor in the United States on account of the high labor costs and the breakage to which the coal is subjected when it is allowed to fall on the stock heaps from a high elevation. Of the mechanical types of storage the Dodge system is most widely adopted. To illustrate the extent to which open-air storage is adopted in America, it may be stated that in the anthracite regions alone a storage capacity of over 5,500,000 tons is provided by the various selling interests involved in the industry; but anthracite coal containing less than 5 per cent. of volatile hydrocarbons is not liable to overheating or spontaneous combustion when stored, and therefore no special precautions are necessary.

BRITISH METHODS OF STORING COAL

In the United Kingdom the railway companies and the municipalities engaged in the gas industry all carry large stocks of coal, and some details will be given now of the methods adopted and the difficulties met with from heating at a works situated in the Manchester district. The coal in this case was stored under cover in three buildings, holding 1,800 tons, 1,400 tons and 800 tons respectively.

In the first two the coal was delivered to the stock heap by conveyors and was piled in cone formation 20 to 24 ft. high and 8 ft. in diameter at the top. In the third building it was stocked by hand to a height of 14 ft.

The coal in No. 1 store gave much trouble from heating, and it was found that the dust and fine slack were in most cases the cause of the trouble. As a result of what was observed, the fine dust was dug out of the heap and spread over it, and pipes were placed in the heap at intervals to enable the temperature to be more closely watched. The greatest trouble with this stock heap occurred in



HOPPERS IN WALES NEARLY COMPLETED

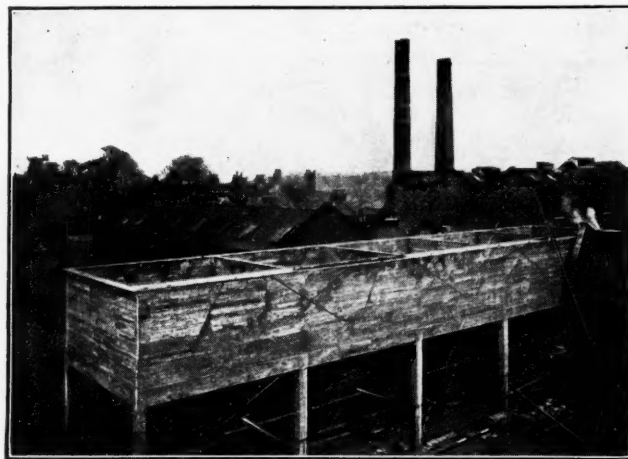
the summer of 1912, and the colliery agents attributed the numerous fires of that year to the fact that after the miners' strike the coal was much crushed at the working face of the mine. Much of this small dirty coal was hurried off to the consumers, who stocked much fresher and smaller coal than usual, to provide against further contingencies. As already stated freshly mined coal is more liable to heat than coal that has been mined and exposed to the air for some time, and pit coal when raised from the mine is also from 4 deg. to 20 deg. warmer than the outside air.

The latest method of stocking coal in smaller quantities, say a week's or fortnight's supply, is in bins or hoppers constructed of reinforced concrete in place of creosoted-wood or iron plates.

According to Adams, who recently read a paper on the subject before the Society of Engineers in Charge, Lon-

don, structures of creosoted timber may last for 50 years, but with increasing expenditure for repairs after the first 15 or 20 years; whereas in 50 years a reinforced-concrete structure will be in better condition than in the year it was built. It is probable that in the future this will be the only method of construction adopted, since it seems impossible to conceive of any better material for the purpose.

If coal stored, either in the open air or in a closed bin, heats and fires, the best method of extinction is to use strong ammoniacal liquor, which is always at hand in gas works. The ammonia gas given off by the liquor helps to displace the air and to smother the fire by depriving it of the oxygen for its support. A fire heap should not be disturbed by poking it about with bars, as this only serves to admit fresh air and to increase the combustion. In the absence of ammoniacal liquor, water must be used to extinguish the fire. When coal stocked



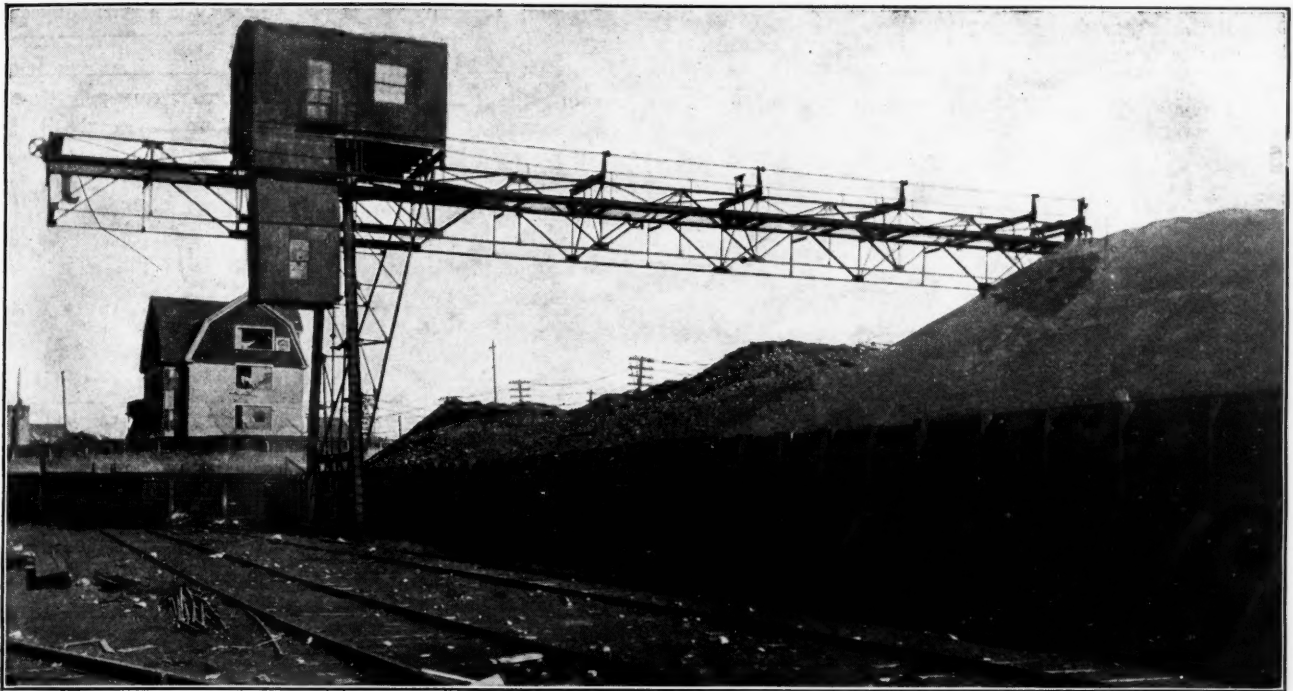
COAL BUNKERS AT A WATER-WORKS

either in the open air or in a bin is simply heating, the best plan is to use it up promptly before it has had time or opportunity to fire. If this plan is impracticable, the coal on the heap or in the bin must be dug out, and the heated coal, when found, drenched with water.

Increased ventilation of a fuel heap or bin that has already started heating will only add to the danger of firing. The first step is to reduce the temperature to the normal by watering, before arranging for increased access of air. The danger of firing is always greater in large heaps or bins than small ones, and therefore if a coal has been found by experience to be especially liable to heating, the superintendent must reduce the volume and weight stored until he can arrive at a safe limit. Some coals which can be stacked safely 12 ft. high will heat if the height is increased to 16 or 20 ft.

Fine slack should not be stored at all unless absolutely necessary, and then only to a few feet in depth. Experience has proved that the influence of the moisture in the coal upon heating and firing is practically negligible and that a coal stocked in a wet condition is no more liable to heat and fire than a coal stacked dry if the other conditions are right.

In closing this article, the recommendations of the United States Bureau of Mines relating to coal storage may be given, as they are in agreement with all the facts and data in this review of present-day knowledge of the subject:



OUTSIDE VIEW OF TUNNELED STOCK HEAP FOR STREET RAILWAY AT WORCESTER, MASS.

1. Do not pile over 12 ft. deep, nor so that any point in the interior of a pile will be over 10 ft. from an air-cooled surface.

2. If possible, store only screened lump coal.

3. Keep out dust as much as possible; to this end reduce handling to a minimum.

4. Pile so that lump and fines are distributed as evenly as possible; not, as is often done, allow lumps to roll down from the peak and form air passages at the bottom of the pile.

5. Rehandle and screen after two months, if practicable.

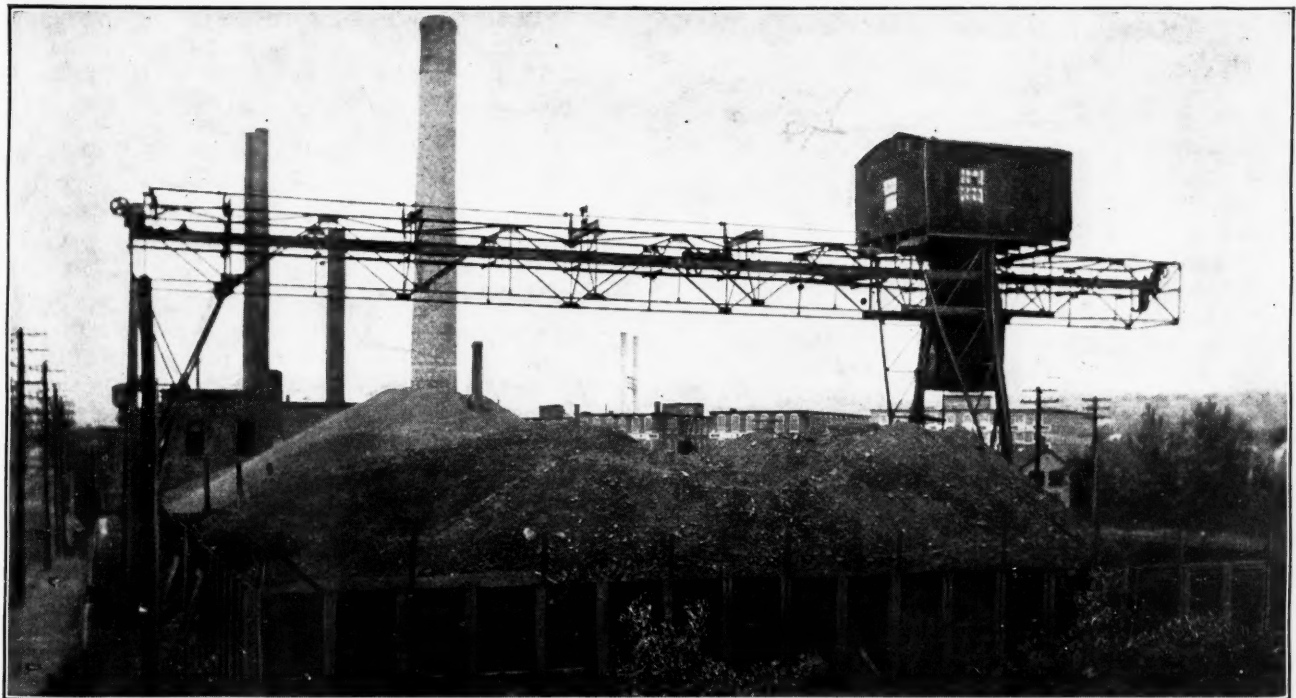
6. Do not store near external sources of heat, even though the heat transmitted be moderate.

7. Allow six weeks' seasoning after mining and before storing.

8. Avoid alternate wetting and drying.

9. Avoid admission of air to interior of pile through interstices around foreign objects, such as timbers or irregular brickwork, or through porous bottoms, such as coarse cinders.

10. Do not try to ventilate by pipes, or more harm may often be done than good.



GENERAL VIEW OF ANOTHER STOCK HEAP THAT IS TUNNELED

In conclusion I wish to thank Messrs. Mouchel and Partners and the Indented Bar and Concrete Engineering Co., of London, also the Worcester Street Railway Co., of Worcester, Mass., for the loan of the photographs used in illustrating the last section of the article.

Central Testing Laboratories for New York City

By R. TRAUTSCHOLD*

Perhaps one of the chief objections to the new coal specifications for New York City is the arbitrary methods resorted to in analyzing. The coal for all departments of the city, with the possible exception of one, is analyzed by city employees at the Central Testing Laboratories. The decision of this experimental station is final, for though it is possible for a dissatisfied dealer to secure a so-called re-analysis of his coal, by paying a special fee, this re-analysis invariably seems to show less advantageous results for the dealer than did the first analysis to which he took exception. Furthermore, the results shown by the Central Testing Laboratories have repeatedly been poorer than those secured by expert chemists who have analyzed the same coal, a variation of as much as 1,000 B.t.u. per lb. having been reported at times. Such a discrepancy under the new city specifications would entail a penalty of 17 per cent., of which 14 per cent. would not be subject to remission no matter how superior the coal delivered on the remainder of the same contract may be.

CHECK ANALYSES NOT PERMITTED

The possibility of a variation of 1,000 B.t.u. in the heating value of two samples of coal from the same shipment cannot be denied, though such a discrepancy would appear very improbable if both analyses were conducted with equal skill and care. Nevertheless the dissatisfaction of the coal dealers is well justified, owing to the fact that their representatives are not allowed to be present at the analysis nor to assist or cooperate in any way. Check analyses are neither invited nor permitted. The dealer virtually delivers his sample at one door of the laboratory and waits at another for a ticket to be handed out informing him how much he owes the city.

That objection and request for a re-analysis usually result in no remission of penalty or in even a still heavier penalty is not difficult to understand. The specifications stipulate that the sample of coal tested should be retained at the laboratories for 30 days. The interpretation of this requirement seems to be that it is the small testing sample which has to be retained, so the balance of the sample from the shipment is discarded. A re-analysis must then necessarily be made on what is left of this testing sample, so an approximate agreement with the first analysis is only to be expected. Reliable tests by the dealer of other samples, which are just as apt to be typical of the mass, will not be considered, and furthermore, the Central Testing Laboratories takes such a stand of infallibility so far as its analyses are concerned that great influence must be wielded to show an error.

As a specific instance, one of the leading coal dealers of the city secured a contract for the delivery of a con-

signment of coal to one of the city departments subject to the usual reservation by the city of the right to analyze the coal and to refuse it should it not meet requirements. A shipment was made and refused. A second shipment was then made with no better result, the consignment being thrown out as failing to possess the necessary heating value. A third was also rejected.

So positive was the dealer that his coal was of high grade that he made a strong protest and finally the corporation counsel ordered a re-analysis of the coal. This was made in the presence of and with the cooperation of expert chemists engaged by the dealer, and it was found that the city had made an error of about 800 B.t.u. per lb. The city was therefore forced to accept this consignment, but it had cost the dealer close to \$250 to compel the city to accept some 300 tons of coal of equal or higher grade than that for which they had contracted. This expense did not include the loss entailed in shipping the first two consignments which were refused.

In another case, a dealer having shipped a consignment of buckwheat to one of the city departments was notified that the sample tested showed the presence of 17 per cent. moisture in the coal. It being impossible for this grade of coal to carry any such amount of water, investigations were made and it was found that the sample can had contained considerable free water. To prove his contention that his coal could not possibly have contained any such percentage of moisture, the dealer had a sample of the coal submerged in water for an hour and then carefully analyzed before any evaporation could take place. The result showed that the coal under even such improbable and unfavorable conditions could be charged with only about half the water previously credited to it. Notwithstanding this, the city authorities maintained that the analysis was typical of the mass of coal as delivered, and the dealer was penalized for the reduction in heating value that the presence of so much water would bring about.

These alleged flagrant examples of the injustices may not be at all common and other dealers may not have so suffered, but they are known among the trade and cannot fail to be one of the reasons at least why the city has been unable to purchase its coal more advantageously.

SOME CHANGES NECESSARY

This criticism of the Central Testing Laboratories is not intended as an accusation of unreliable testing, etc. The results obtained by the dealers' experts may be no more really typical of the mass of coal than those obtained by the city chemists. It may simply be that no sample of coal as taken is really typical of the mass. In such a case, and in any case, the only equitable arrangement is to allow the dealer to engage chemists of standing to check the analyses by the city and to submit analyses of their own which may be checked by the city's employees, the average of all tests to be taken as fixing the value of the coal. Such an arrangement would undoubtedly add to the city's expense for testing, but the amount would be negligible compared to that now imposed on the coal dealers.

The Central Testing Laboratories has unquestionably protected the city from some consignments of poor grade coal, but the record of penalties imposed in no way represents net savings to the city. Some of the penalties may have been imposed on coal of suitable grade and are

*39 Charles St., New York City.

always based on prices that are figured so as to protect the dealer against the possibility of unjust penalization. The prices actually paid for the coal purchased have in part covered the penalties imposed, as the dealers have had to protect themselves.

A reduction in the amount of the proposed penalties would also have a tendency to better the prices at which coal is offered to the city, for a tax of 1 per cent. for each 100 B.t.u. lack of heating value, to say nothing of the 2 per cent. penalty imposed if the deficiency exceeds 300 B.t.u., is an exceedingly heavy one to inflict on a commodity which must carry such a heavy freight burden as coal delivered to New York. Steam sizes of anthracite carry a freight charge of about 500 per cent. on the cost of the coal at the mines, a burden that is not reduced by any commissions to the dealers. Thus a 1-per cent. penalty on the market price of the coal in New York is equivalent to about a 6-per cent. tax on the net cost of the coal at the mines—a 6-per cent. penalty on the cost upon which the dealer must figure his profit. The failure of a coal to meet the requirements of the city by 1,000 B.t.u. as ascertained by the Central Testing Laboratories, would be penalized under the new specifications by 17 per cent. of its net weight, or 102 per cent. of its gross weight at the mines, over its actual cost to the dealers.

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New and Efficient Coal Pier

Work has been started by the Pennsylvania R.R. on the construction at Canton Wharves, Baltimore, of a new coal pier of large capacity which is expected to prove one of the most efficient in the world. It is thought that the structure will be completed by early summer. It will provide facilities for loading 20,000 tons of coal per day into vessels.

The pier will be 940 ft. long and 66 ft. wide. It is to be built on creosoted piles with reinforced concrete floor and concrete bulkhead. Space will be provided for loading four vessels at a time, utilizing both sides of the structure.

In order that the work of transferring coal from the cars to the ships may not be hampered in cold weather, a thawing house, with a capacity of 30 cars, is to be provided. Coal frozen in the cars will be quickly thawed out by steam so that it can be easily dumped.

The pier will be operated as follows: The cars will be pushed from the yard onto a kick-back, from which they will descend by gravity to a dumper, where they will be picked up and turned over, emptying the coal into a hopper. Under this hopper small 4-ton cars will be run by means of an endless cable up an incline and out on a trestle along the center of the pier. On both sides of this trestle traveling unloaders are to be provided, which can be moved to any location desired. The small cars will be dumped automatically into hoppers constructed on these unloaders. The coal will then be elevated by a conveyor to telescopic chutes lowered into the holds or bunkers of the vessels.

There will also be constructed storage bins at the end of the pier for different grades of coal for local harbor trade. These boats will be loaded by means of a small traveler.

The plans for the pier include the construction of a storage yard, for loaded and empty cars, having a capacity of 1,000 cars.

The Maryland Dredging and Contracting Co., of Baltimore, has been awarded the contract for dredging at the dock and grading the new yard. The pier will be built by the Arthur McMullen Co., of New York, and the machinery will be furnished by the Mead-Morrison Manufacturing Co., of Chicago.

Ballads of a Coal Miner--XII

Written Expressly for Coal Age

Ambition

BY BERTON BRALEY

I'M pitboss now, an' you can take this plain,
The roughneck kind of bossin's on the wane;
I'm gonna try a new an' novel plan
Of treatin' every miner like a Man.

Perhaps I'm wrong, but probably I'm right
In feelin' that a feller treated white
Will mine more coal an' do a better job
Than any guy that's treated like a slob.

It ain't the kind of cussin' I kin show
That holds my job, it's knowin' what I know;
There's lots of lads whose line of talk is fine,
But that don't boost the tonnage of the mine.

So I won't be the roarin', shoutin' kind,
I'll save my lungs—an' try to use my mind;
For it is brains that sees a feller through
An' makes the money for the owners too.

I'm pitboss now, an' mighty glad I be,
Fer we've just started on a family,
A ten-pound baby, fat an' pink an' sleek,
A bouncin' boy who just arrived this week.

An' with this bossin' job an' better pay
I'll give the kid a chanct to make his way,
Fer with a decent start he'd ought to climb
An' mebbe be a manager in time.

A Puzzle in Mining Costs

By J. F. K. BROWN*

SYNOPSIS—Experiments in longwall mining of a thin coal measure did not prove the superiority of this practice over the room and entry system. Conditions are, however, not conducive to economical production by either method, the greatest reducible expense being in the transportation of the coal from the face to the surface. Discussion of this proposition is invited.

In issue No. 18, Vol. 6, Oct. 31, 1914, of *Coal Age* a description was given of the operation of a 16-in. coal seam being mined in New Brunswick. Since then a further step has been taken toward placing this field among the remunerative coal-producing areas of that province of Canada and on a bigger scale than has hitherto been possible.

The work done has been that of experimenting on the longwall system and the collection of increased data on the room-and-entry system, all with a view to further expansion. Coincident with that work the discovery has been made that part of the mine has worked on coal as low as 13½ in., which has brought the average thickness down to the neighborhood of 15 in., or slightly less.

The attempt at the longwall was a difficult problem and one that has not yet been satisfactorily solved. From the longwall point of view, the roof conditions are open to much objection. Immediately above the coal there is about 30 ft. of shale and above this at least 30 ft. of sandstone. In some parts the shale over the coal is much thicker. Theoretically this should be a bad roof for longwall, considering that the shale in this case is a rock with relatively little adhesion and that there lies above it a heavy sandstone that will presumably tend to create heavy "bumps" when it settles.

While the question has not yet been absolutely settled in the workings, enough has been seen to prove this point of view wrong. The shale after breaking down above the coal up to a height of 20 to 25 in.—provided the face is properly timbered—bends over into the waste space in a regular roll behind the coal. There is no sign of an abrupt break. In doing so it is to be presumed that the shale parts from the sandstone, leaving the latter to afterward break of its own weight onto the shale already sunk into position. The shale therefore must act as a cushion for the sandstone. Whether this theory is the correct one or not, it is a fact that longwall in this seam is not accompanied by any violent breakage of the roof. Instead the roof pressure induced by the extraction of the coal is regular, but rather quick in action.

TWO LONGWALL FACES WERE DEVELOPED

In the actual attempts at longwall two faces were developed one after another. Both, it may be frankly admitted, looked as if they were failures so far as the total cost was concerned, but an analysis of the figures in detail reveals a different story.

The first longwall was laid off parallel to the "cleats" in the coal, as shown in the accompanying illustration.

The attempt was also made to get the mine cars along the face on a track parallel to the coal, the face being designed on the conveyor system with one center road for the whole distance from which coal was being mined.

Still another feature and the source of much trouble was the method of timbering first adopted. None of the men employed had ever worked in longwall and, perhaps worse still, from always having been accustomed to the other system, had somewhat of a prejudice against the change. An expanse of roof such as longwall offers had never been seen by them before, and the method of timbering at first tried was an interlacing system evolved from old ideas.

A set of booms was continued in one long line across the whole bench of coal, about a foot from the mining. These were tied into the packs built on the roadside. Furthermore the use of a track along the coal face necessitated another set of booms under the first, but at right angles thereto. The net result was that instead of the roof being allowed to come down regularly of its own free will, it was kept in a state of "animated suspension." To get the cars along the face road required that certain timber had to be taken out and reset. This resulted in the roof getting a little play and the loss of height in the face roadway. This was a serious matter where height is limited by natural and practical reasons to the lowest possible limit.

Lastly also, owing to the timber, the roof used to strip for the full height of the roadway right across the section from one end to the other. As a result about three times as much rock was handled as coal. All this resulted in a much-congested section, cars of coal and rock getting inextricably mixed every hour of the day. It seemed impossible to bring system out of the chaos.

THE MINE CAR WAS NOT ADVANTAGEOUS.

The use of a track along the face built for the usual mine cars was also seen to mean too great a stretch of roof between the coal and the waste behind it. It became impossible to get these cars more than halfway along the roadway before this passage was either blocked with rock or had become too low.

There is another way of looking at this fact, and that is that perhaps the rate of advance of the face was too slow—not fast enough to counteract the rate at which the roof subsided. It is conceivable that if it had been possible to get a 4-ft. bench of coal daily instead of a 2-ft. bench, it might have been the case that the roadway used for the cars at the face would have held up long enough for its use for each day's coal, which also would have helped to solve the stowage question.

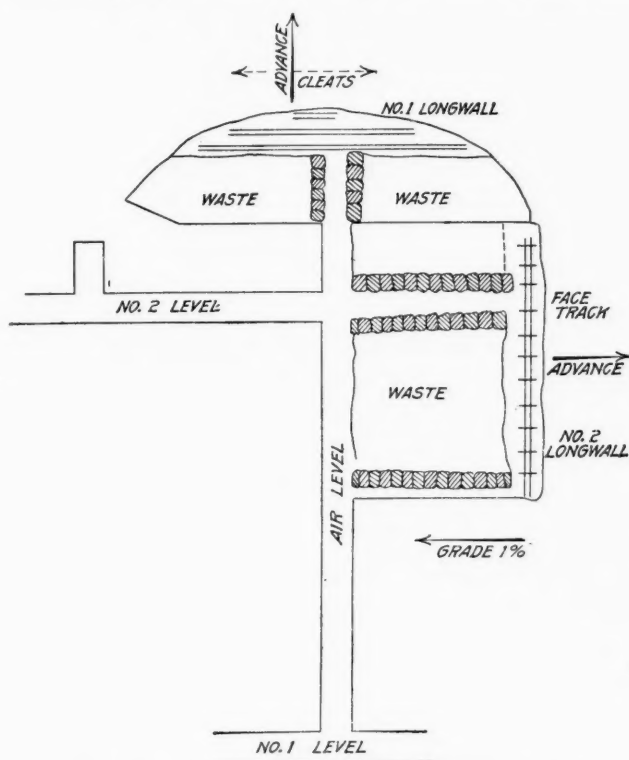
However, this question was never determined, since the handling of the rock became too great; and seeing no sign of improvement, the section was abandoned just when the center road roof had descended enough from the weight induced by the effect of the first break to need brushing.

The second longwall section ran at right-angles to the first, and profiting by experience gained in the original section, it was laid out and timbered on somewhat different principles. This is also shown in the illustration.

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Having determined that the roof would not stand a great span between coal and waste in relation to the rate of advance, a conveyor car was built, which ran on an 18-in. track. The main or center roadway was lowered so that the ordinary mine cars ran underneath this face car. The experimental conveyor car was in this case run by hand, but in a long face and when operated properly would be moved to and fro by a small haulage engine. The coal should automatically fall through the bottom of this small car into the mine car when the small car passes over the bridge at the roadhead.

The use of this car enabled a 2-ft. bench to be mined every day, and this in turn provided a space into which the small conveyor-car track was easily shifted after each mining, reducing the roof span about half. Next the timber was set at right-angles to the face, a short boom and two props to the set. Each set was separate and



POSITION AND ARRANGEMENT OF THE TWO LONGWALL FACES

was not connected in any way with any other set of the timber packs. The roadway timber packs were built more solidly, better filled and to some extent were interlaced in the direction of the road. No packs were built anywhere except at the roadside.

It was at once evident that this new method of timbering had first of all the tendency to maintain a straight face, which in the last section had finally assumed a half-moon shape. Such stone as came down from above the mining was stowed in the space left after the coal was taken out. No attempt was made to build this up, as no stone fit for this purpose was obtained from the roof.

With the use of the conveyor car necessitating a center roadway below the level of the coal face, no extra stone need be taken down in this passage. This enables a lower and an unbroken roof to be maintained across the face, with less rock to handle and the roof easier kept under control.

This, the second experiment in the longwall, was admittedly a great improvement on the first. There was no congestion in operation, and no roof troubles are likely to develop under this system. The roof was under better control, more rock could be stowed in the waste space created by the extraction of the coal and the roadway appeared to stand better. But even with these advantages the work was not yet entirely satisfactory, the troublesome point being mainly the removal of the coal and rock from the face to the mine mouth.

Pending the adoption of an efficient haulage system, which the costs show is the trouble beyond doubt, this section has been stopped for the time being, the face having been left heavily timbered, while another level of the mine is running on the pillar-and-entry system.

The net results have been to leave the experimenters poorer in pocket, but quite convinced that the longwall system as demonstrated by its short trial of two months, as against the accumulated experience of 10 years for the other system, was a hot competitor of the older method of mining.

When it is said that the older means of working the coal has been in use for 10 years or thereabouts, it is not suggested that the older system has been in profitable operation all that time. Far from this, the tale of mismanagement, of misapplied capital and destruction of coal areas in this field should, in the magnitude and stupidity of the mistakes made, rank as one of the wonders of the world.

One of the companies which in the past operated in this field held 2 sq.mi. of coal land in lease. This area, after allowing 25 per cent for unworkable coal (area cut through by a river), waste and loss, would contain about 1,900,000 tons. On this quantity it based a capital of \$1,000,000, equal to about 60c. per ton of coal in the ground. The present operators figure for the same area just over one-half cent per ton.

Furthermore, the fact that all the labor of the district was brought up on the pillar-and-entry system was certainly an advantage to that method, while none of the men had even seen a longwall face in operation, much less worked in one.

ALL COAL GOES TO ONE CUSTOMER

Before the question of costs is taken up the fact should be mentioned that the coal produced is sold at the mine in railway cars for \$2.55 per ton. There is only one customer, a railway company, and therefore there are no bad debts and no sales force to keep up. More coal is badly wanted, but it cannot be secured at the moment. Overhead charges cease in this case with the management, timekeeping being in the hands of the weighman. Book-keeping and financial matters, which take but little time, are looked after by one of those interested in the venture.

Lastly there is the important fact that the coal areas being operated are not owned outright by the company, but are leased, although the royalty is paid by the railway company to whom the coal is sold. In other words, owing to conditions over which the present operators have no control, a lower price is accepted for the coal produced than would obtain under ordinary circumstances, and all such questions as sale, carriage to distribution point, royalty, payments on land held, etc., are attended to by the railway company. The fact that the coal lands are

leased has a great effect on the capital required, just as great an effect as the low overhead charges have on the total cost of mining.

The situation having been made clear by this explanation, it would appear as though the wrong horse had been backed when it is said that the cost of operating the longwall ran to \$3.19 per ton and the room-and-pillar to about \$2.90 under the last few months of operation. Formerly when the mine was a one-man concern, this cost ran to \$2.24. It will therefore look as if experimenting had been a failure and barren of results. Nevertheless an analysis of the costs shows something a little different from the foregoing.

First of all the low cost of \$2.24 was obtained at a time when the rooms were relatively near the mine mouth, and could mining still be maintained close to the entrance the cost would yet be the same. It is in the nature of things, however, that development will gradually lengthen the haul until at the present time the rooms are about three times their former length, and as all tramming is done by hand the cost naturally increases rapidly.

Under the old arrangements the miners were paid a lump sum for mining the coal, taking down the rock and handling both to the mine mouth, but the natural increase of the haul had to be met by a higher price until now the cost of getting the coal from the face to the entrance by hand labor has overcome the profit on the mining. There was therefore all possible justification for trying some experiments in one direction or another.

TWO IMPORTANT FACTS DEMONSTRATED

The results obtained have demonstrated two important facts—first, that there is nothing in the conditions either natural or artificial under which the actual mining of the coal takes place that could cause the cost to rise under either system to a point at which operation would not be profitable; second, that success depends on the successful solution of a haulage problem. Putting the matter another way, the work done shows that the natural conditions of the field are such as to allow of profitable mining, while such outstanding points as must be settled are matters of investment and design and quite within intelligent control.

Details of the costs of the two systems under present conditions are as follows:

| COST PER TON MINED | | |
|-----------------------------|----------|----------------|
| | Longwall | Room-and-Entry |
| Mining | \$0.83 | |
| Stonework | .33 | \$1.46 |
| Loading | .33 | |
| Development | | .11 |
| Timbering and timber | .29 | .14 |
| Tramming | .83 | .56 |
| Weighing and handling | .17 | .17 |
| Hoisting | .14 | .19 |
| Trucking | .17 | .17 |
| Sundries (horsefeed) | .10 | .10 |
| Total | \$3.19 | \$2.90 |

Both columns are based on a 9-ton-a-day experimental level. The first point appreciated is the high timber cost in the longwall as compared with the room-and-entry system. Frankly this is rather a puzzle and apparently represents the difference between the two methods in this particular item. It is possible that there is more timber in the longwall than later practice might require, since in trying a new method caution might demand the use of excess props and packs.

The tramming cost is excessive and also shows a large discrepancy between the two levels. As these were

identical in length although not in actual hauling condition, the longwall level having the disadvantage of a more poorly graded road, the difference is mainly due to the varying quantities of rock handled. But even allowing for the fact that there must in either method of mining be a certain large percentage of rock handled, there is still room for a great reduction in the tramming costs. These figures are for hand-tramming. What then could a mechanical, horse or motor system accomplish?

COAL IS NOW HAULED BY WAGON

The figures of trucking and sundries can be taken together. At the present the coal is trucked from the bin at the top of the mine haul to the railway cars by wagon, but as a short branch line is to be put in, these items of cost can be eliminated from future calculation. Weighing, handling and hoisting are recognizably heavy owing to the percentage of wasted time involved. On a small output this goes as high as 75 per cent., and therefore these costs may naturally be expected to drop as the output rises.

Consideration of the costs generally seems to indicate that the items to be readjusted are the tramming costs through the installation of a mechanical system and the raising of the output, whereby the hauling, handling and overseeing expense will become lower and be brought into something more like proper proportion to the actual mining costs.

Here facts are left behind and supposition enters. Imagine for a moment that a mechanical system is installed satisfactorily. It appears reasonable to think that the following figures on both systems are possible:

LONGWALL SYSTEM

| | Tonnage Daily | | | | |
|------------------|---------------|--------|--------|--------|--------|
| | 9 | 18 | 30 | 50 | 100 |
| Mining | \$0.83 | \$0.83 | \$0.83 | \$0.83 | \$0.83 |
| Stonework | .33 | .33 | .33 | .33 | .33 |
| Loading | .33 | .33 | .33 | .33 | .33 |
| Timber | .29 | .29 | .28 | .27 | .27 |
| Tramming | .34 | .17 | .14 | .11 | .07 |
| Handling | .14 | .07 | .05 | .05 | .03 |
| Hoisting | .01 | .01 | .04 | .02 | .01 |
| Sundries | .01 | .01 | .01 | .01 | .01 |
| Management | .22 | .16 | .13 | .08 | .04 |
| Total | \$2.49 | \$2.36 | \$2.14 | \$2.03 | \$1.92 |

PILLAR-AND-ROOM WORKING

| | Tonnage Daily | | | | |
|-------------------|---------------|--------|--------|--------|--------|
| | 9 | 18 | 30 | 50 | 100 |
| Mining | \$1.46 | \$1.46 | \$1.46 | \$1.46 | \$1.46 |
| Stonework | .12 | .12 | .11 | .11 | .11 |
| Loading | .11 | .11 | .11 | .11 | .11 |
| Timber | .11 | .11 | .11 | .11 | .11 |
| Development | .34 | .17 | .14 | .11 | .07 |
| Haulage | .01 | .01 | .05 | .03 | .03 |
| Handling | .01 | .01 | .01 | .01 | .01 |
| Hoisting | .14 | .07 | .04 | .02 | .01 |
| Sundries | .22 | .16 | .13 | .08 | .04 |
| Management | | | | | |
| Total | \$2.40 | \$2.27 | \$2.05 | \$1.92 | \$1.84 |

Tonnage wanted, say 50 tons per day.
 Thickness of coal, 15 in.
 Roof, shale.
 Height of working, 33 in.
 Height of roadways, main, 5 ft.
 System, room-and-pillar.
 Grades, 1 per cent. in favor of loads in levels, 1 per cent. against load in rooms.
 Number of levels, two in operation.
 Number of levels to be driven, two.
 Distance apart, 200 ft.
 Rock handled to coal, one car of rock to three cars of coal.
 Weight of coal cars, 700 lb. loaded.
 Weight of rock cars, 1,500 lb. loaded.
 Power, none to spare, steam for hoist on incline.
 Ventilation, very good.
 Distance of railroad from mine mouth at present, 600 ft.
 Size of pillars, 30x20 ft.
 Width of rooms, 30 ft.
 Weight of rails, 16 lb. per yd.
 Present haulage, hand-tramming.
 Wages: Laborers, \$1.50 to \$1.75 per day; boys, \$1.30; miners paid 6½c. per 100 lb. of coal in cars at mine mouth, doing all work.
 Timber, 8c. a foot.
 Skilled labor, none available.
 Wages of skilled labor, would get \$3 per day.

Depreciation is taken care of by the creation of a sinking fund at the rate of 25% of the profits annually. Up to the present capital expended has amounted to only \$5,183, which means that common-sense has so far prevailed in the management of the company and its capital. There is a further \$6,817 yet to be called on and obtained for future work.

It is hardly likely that an output of 100 tons a day will be attained, since it will probably prove to be the case in this field that it would be better engineering to have a number of openings of comparatively small capacity rather than attempt a large production with long underground hauls. It is possible, however, that at least 50 tons per day can be obtained. A simple calculation will serve to show that this field, even if the seam is extraordinarily thin, can be a dividend earner of no mean order.

LET US HAVE DISCUSSION

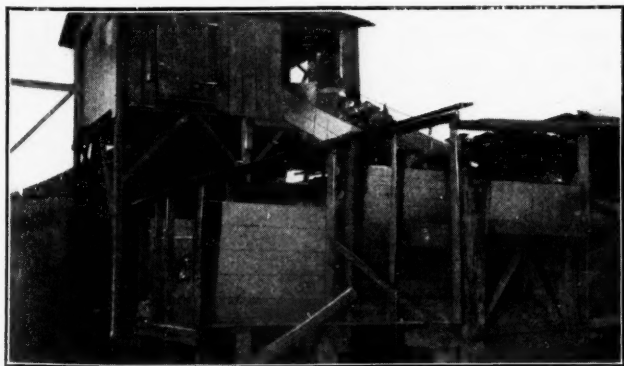
But it still remains to see whether actual practice will fulfill expectations as outlined. Can it be done? I hope through the medium of *Coal Age* to have this whole problem treated as a subject for discussion. Personally I believe that the foregoing costs can be attained, and rightly or wrongly I imagine that mining a coal bed averaging 15 in. is out of the ordinary and that it is a subject well worth some study, since every day sees some coal field approaching the time when it too must consider operating such seams as this or go out of business as a coal-producing center.

The accompanying condensed particulars are therefore presented in the hope that other operators will tear the figures inside out and show wherein they are wrong and wherein they may be made right in order that we may all learn from the discussion. Attention is drawn mainly to the haulage question involved.

3

Diminutive Mine in Illinois

Producing in one year what many modern mines do in one day is the capacity of the Oswald & Young Coal Co., located in the southwestern part of Will County, Illinois, near the city of Braidwood. The shaft is 60 ft. deep,



MINE TIPPLE OF OSWALD & YOUNG COAL CO.,
BRAIDWOOD, ILL.

working the No. 2 Illinois seam, which is about 3 ft. 6 in. in thickness at this property. The production varies from 30 to 40 tons per day and is all disposed of around Braidwood.

The output fluctuates with the local demand, being high during the cold months and running low during the

summer months. There are no direct railroad connections, all the coal being hauled by teams. Pumping water from the mine is the only mechanical feature about this property, hoisting power being furnished by a faithful blind Dobbin trudging along a well-defined circular path. The miners haul their own coal to the shaft bottom, receiving \$1.05 for each ton of coal so delivered.

The system of mining is the longwall method practiced so extensively in this Illinois district. This mine affords great interest to the students of geology in the Chicago schools, who make frequent inspection trips to the operation to study the character of the No. 2 Illinois bed as it occurs in the northern district.

Recent Legal Decisions

Proof of Shortage in Coal Shipments—On a question as to shortage in coal shipments, the shipper cannot, as against a third person, testify as to the weights at the destination, where the testimony is based merely upon information derived from the consignee. (Kansas Supreme Court, *Wilkes vs. S. V. Clark Coal and Grain Co.*, 148 Pacific Reporter, 768.)

Contributory Negligence Concerning Ventilation—A coal mining company is not liable for injury to a miner resulting from inhalation of bad air when he returned to his place of work too soon after shots had been fired, in violation of an established rule of the company. (Kentucky Court of Appeals, *Wilson vs. Bon Jellico Coal Co.*, 181 Southwestern Reporter, 169.)

Employer's Duty to Cause Inspection of Roof—Under the Kansas mining laws it is not actionable negligence for an operator to neglect to cause inspection of a room in a mine after shots have been fired, to discover defects in the roof and displaced props caused by the explosion of the shots. (Kansas Supreme Court, *Brooks vs. Central Coal and Coke Co.*, 152 Pacific Reporter, 616.)

Effect of Oregon Employers' Liability Act—The Oregon Supreme Court holds in the case of *Raiha vs. Coos Bay Coal and Fuel Co.*, 151 Pacific Reporter, 471—a suit for damages for injury to a miner in a gas explosion in a coal mine—that by the provisions of the Employers' Liability Act, though contributory negligence is not a bar to recovery of damages by an employee for an injury resulting from carelessness of his employer, the measure of the loss occasioned by the hurt is apportioned ratably between the parties according to their respective want of ordinary care.

State Control Over Intrastate Freight Rates—In sustaining the action of the Ohio Public Utilities Commission in ordering reduction on coal freight rates on shipments between certain points within the state, the Ohio Supreme Court upholds the power of a state to prescribe reasonable intrastate rates for the carriage of particular commodities. But it is held that the power must be exercised in the light of the carrier's right to proper compensation for transportation service and that considerations of public interest cannot be invoked as a ground to compel a railway company or other common carrier to maintain a rate on a particular commodity that will deny proper compensation. (*Hocking Valley Railway Co. vs. Public Utilities Commission of Ohio*, 110 Northeastern Reporter, 952.)

Injury to Mining Contractors—Plaintiff, an experienced miner, contracted to drive a heading in defendant's mine, under an agreement that he should be paid by the year for rock and coal removed. He employed his own help and did the work in his own way, except that he was responsible to defendant company for doing the work according to the rules and regulations of the mine. It being discovered that he had gotten the work somewhat off center, he was directed to put the track on centers. In attempting to carry out the order, it became necessary to remove certain props, which resulted in a fall of rock and coal which injured him. In a suit brought to recover for the injuries, it is held that the defendant was not guilty of actionable negligence. "The order was general in its terms, and required of plaintiff what was necessary to be done, and what he was employed to do; and he undertook to do it in his own way, so far as methods and details were concerned." (Alabama Supreme Court, *Wade vs. Woodward Iron Co.*, 68 Southern Reporter, 1008.)

Power-House Chimney Design for Bituminous Coal

By REGINALD TRAUTSCHOLD*

SYNOPSIS—As a power-house fuel bituminous coal has the great advantage over anthracite of being more easily ignited. It therefore burns more freely, makes a fire that is more easily controlled and requires lower stacks to secure the necessary draft.

When a choice must be made of coal for power-house use, the bituminous and semibituminous varieties are much more generally used than the cleaner and more difficultly burned anthracite. These softer coals are produced in far larger quantities than anthracite, from five to six times as much bituminous and semibituminous being mined in the United States each year as the total annual output of hard coal.

The average cost of the bituminous coals at the mines is only about 55 per cent. that of the hard coals, and the bituminous fuels being mined more extensively, they are usually procurable from some comparatively near-by mine, avoiding the heavy freight burden which has to be carried by anthracite in many parts of the country.

The average heating value of the semibituminous coals is somewhat higher than that of anthracite, though that of the wholly bituminous fuels is somewhat lower. Classifying bituminous and semibituminous coals as "bituminous," their average heating value is very nearly the same as the average of anthracite, while they ignite and burn much more easily.

The only advantages of anthracite as a power-house fuel—its cleanliness and its lack of the obnoxious smoke that formerly made the burning of bituminous a nuisance—are now rapidly being discounted by the marked progress made in the smokeless combustion of soft coal. In fact, it is rapidly becoming recognized that for power-house fuel bituminous and semibituminous coals possess all the advantages of anthracite and lack certain of its disadvantages. They furnish about as much heating value, if not more, and besides are cheaper and can be burned much more readily.

CHIMNEYS FOR BITUMINOUS COAL ARE LESS EXPENSIVE

Furthermore—and this is important in power-house operation—the chimneys required for developing the necessary draft are usually much less expensive, for they need be nowhere near as tall as those required for producing the draft necessary successfully to burn the harder coals. For instance, the chimney required to burn advantageously by natural draft 35 lb. of buckwheat per square foot of grate area per hour would have to be about 425 ft. high, while the same quantity of Eastern bituminous run-of-mine could be efficiently burned on an equivalent grate served by a chimney less than 125 ft. tall. There is little actual difference so far as draft is concerned between various sizes of bituminous coal, slack requiring little if any greater draft than nut, lump or run-of-mine.

Chimneys for power houses burning bituminous or semibituminous coals are subject, naturally, to the same influ-

ences which affect the operation of chimneys for anthracite, so that the proportioning of these stacks is necessarily as haphazard as in the case of chimneys for plants burning hard coal. In fact, the inefficiencies so prevalent in the anthracite chimney are apt to be accentuated in bituminous chimneys, since these latter are not as tall, so that a variation of a few feet in height promotes greater proportional inefficiencies.

Furthermore, the bituminous coals are not prepared for the market in the variety of standard sizes which facilitate the calculations for anthracite chimneys and which enable more accurate and exact heights to be figured. Bituminous coals vary considerably in their composition and again differ from the richer semibituminous coals. Eastern bituminous fuels are more readily burned than Western bituminous, and both are more easily ignited than semibituminous coals. Chimneys for the soft coals are, then, proportioned for Eastern bituminous, Western bituminous or semibituminous fuels, usually without regard to the size of coal fed to the grates, the necessary draft being about the same irrespective of the fuel size.

WORK OF BITUMINOUS CHIMNEY IS LESS EXACTING

The work imposed on a bituminous coal chimney is of course similar to that required of a chimney for anthracite, but is considerably less exacting. The draft (the measure of the work performed by the chimney) required for elevating the products of combustion from the base of the stack to its top is naturally much less in the case of chimneys for bituminous coal, the distance through which the products are raised being considerably less.

The second service, or rather the first duty, demanded of the chimney is the drawing of the requisite amount of air for the proper combustion of the fuel through the firebed and of drawing the products of combustion through the boiler, fuel economizers or other heat-reclaiming devices, and through the breeching to the base of the stack. This varies considerably from the similar operation when burning the harder coals. It is always somewhat less for the same rates of combustion, but quite appreciably less for the high rates common to modern power-houses.

The draft required for drawing the products of combustion, once they have been formed, from the combustion chamber to the base of the stack is about the same, obviously, as that required for handling the products of the combustion of anthracite. The furnace draft—the energy required for drawing the requisite air through the fire bed—is considerably less at fair rates of combustion than even when burning comparatively large anthracite at low rates of combustion, and this is governed by the variety of coal burned on the grates as well as by the rapidity with which the coal is burned.

The installation of fuel economizers or other heat-reclaiming devices in the path of the products of combustion, from the boiler to the base of the stack, increases the draft necessary to draw these products from the combustion chamber to the stack base exactly as in the

*39 Charles St., New York City.

case of such installations in plants in which the fuel consumed is anthracite.

Chimney heights of actual installations, supplemented by estimated efficient heights, by the use of a conservative and reliable empirical formula, for various rates of combustion when burning bituminous and semibituminous coals, form the data from which the accompanying curves are plotted. The use of such a chart greatly facilitates calculations, and the results secured by its use are quite as reliable as are obtained by the use of exacting formulas or by a detailed consideration of the various component drafts constituting the total draft required of the chimney.

With such a chart, all that is necessary for ascertaining the required height of the average chimney serving a grate upon which bituminous or semibituminous coal is burned is the maximum rate of fuel consumption, the variety of coal consumed and whether fuel economizers or other heat-reclaiming devices are installed. The cross-sectional area of stack required for handling the products of combustion from bituminous coals is no greater than for handling those from the same weight of any other coal burned at the same rate, so that the calculations required in the case of bituminous coal chimneys are exactly similar to those for chimneys serving boilers fired with anthracite.

A CHIMNEY SHOULD BE OVER 65 FT. HIGH

A bituminous coal chimney, to prove efficient if auxiliary forced or induced draft is not employed, must be over 65 ft. in height, if no fuel economizers or other heat-reclaiming devices are installed, or over 85 ft. in height, if such equipment is employed, no matter how low the rate of combustion required. This minimum height of chimney is nearly the same as in the case of anthracite chimneys, so that for low rates of fuel combustion there is little difference, so far as cost is concerned, between chimneys for anthracite and bituminous coals. However, it is a failure to realize the fact that bituminous chimneys must be of a certain height that has led to the building of so many stacks from furnaces burning this fuel which belched forth great volumes of black smoke.

This point is of particular importance in the case of chimneys for bituminous coals, for they are more sensitive to the effect of height than chimneys serving anthracite fires.

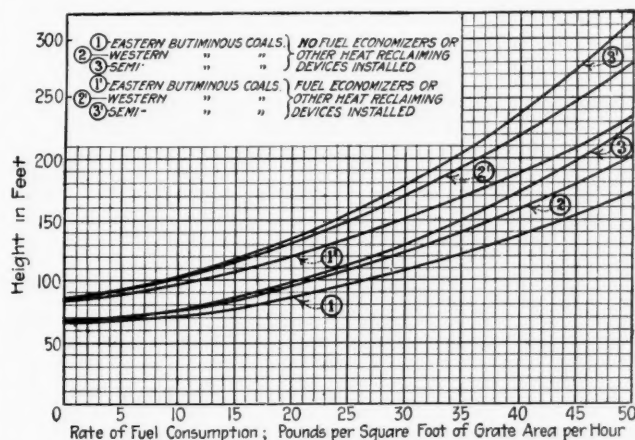
In many instances of smoking bituminous chimneys, a taller stack would probably have overcome the nuisance and the waste of fuel. Such a chimney would supply the air required for better combustion, which would be all that would be necessary if the furnace and the gas passages were properly proportioned. In installations in which chimneys are not or cannot be built as high as indicated on the chart, the resistance to the passage of the products from the combustion chamber must be increased so that mechanical draft may be installed. This, together with the natural draft of the stack, must total to the natural draft which would be created by a chimney of the height depicted on the curves for the required rate of combustion of the particular variety of coal.

A chimney to serve a plant burning pea coal at a rate of 25 lb. per square foot of grate per hour, the most easily burned of the steam sizes of anthracite, would have to be 175 ft. high; while burning buckwheat No. 3, the most difficult of the anthracite coals to burn, the chimney

would have to be over 385 ft. in height. Though the rate of fuel consumption is not particularly high from the point of view of modern practice when carrying sudden peak loads, the required chimney heights when burning soft coal would be respectively 97 ft., 108 ft. and 113 ft. for Eastern bituminous, Western bituminous or semibituminous.

COST IS NOT PROPORTIONATE TO HEIGHT

This does not mean that the chimney for the softer coals would be 44.5, 38.3 or 35.4 per cent. less costly than the most inexpensive chimney for anthracite fuel, as the cost of the chimney foundations would be almost as great in the case of soft coal chimneys as in the 175-ft. chimney. It does signify, however, that the saving in necessary building expense would be appreciably less for a bituminous coal chimney than for one suitable for the burning of even the most easily consumed of the anthracite steam sizes. A plant operating on anthracite would probably



CURVES SHOWING HEIGHT OF CHIMNEYS FOR VARIOUS RATES OF COMBUSTION

not burn pea—it would be much more apt to burn buckwheat No. 3; in which case the saving in height of chimney possible by the use of bituminous or semibituminous coals would be from 70 to 75 per cent.

Considering a case more nearly resembling modern conditions of power-plant operation, it may be assumed that the maximum rate of fuel consumption for which the chimney would have to be proportioned would be 40 lb. of coal per square foot of grate per hour. Such rate, if mechanical draft were not resorted to, would limit the practical anthracite fuel to pea. The chimney required to furnish the requisite draft for burning pea at a rate of 40 lb. per square foot of grate per hour would be over 310 ft. high. With the same rate of fuel consumption, a 137-ft. chimney would be adequate for Eastern bituminous, one 158 ft. high would suffice for Western bituminous, while one 173 ft. tall would answer for semibituminous coal.

Striking as are the foregoing examples of the advantages of the use of bituminous coals for power-house purposes, from the point of view of chimney construction, an even more marked advantage is the comparatively slight alterations in height necessary to a bituminous chimney to secure greatly increased rate of fuel consumption without the installation of mechanical draft equipment.

Taking for example an old plant which formerly operated, under the most exacting conditions, at a maximum

rate of fuel consumption of 20 lb. per square foot of grate area per hour and which was to be remodeled so as to permit a rate of combustion of 40 lb. of coal per square foot of grate per hour, had the plant fuel under the old conditions been pea, the increased rate of fuel combustion would necessitate the addition of about 175 ft. or more to the height of the chimney. Had the plant used bituminous coal, with a properly proportioned chimney, doubling the maximum rate of fuel combustion would only have required the addition of 50 ft. to the chimney if Eastern bituminous coal were used, 63 ft. in the case of Western bituminous and 73 ft. if the fuel employed was semibituminous.

BITUMINOUS-BURNING PLANTS ARE MORE FLEXIBLE

When remodeling any such plant as the foregoing, it is almost certain that mechanical-draft equipment would be installed for caring for the increase in rate of fuel consumption, but the illustration is of interest as showing the much greater flexibility of the bituminous coal chimney. A few feet added to the necessary height of a bituminous coal chimney—a condition that is common in practice and one that is really almost unavoidable on account of the approximations which have to be employed in even the most careful calculations—will permit a relatively large increase in the allowable maximum rate of fuel consumption. In the case of a chimney properly designed for the use of anthracite, on the other hand, several times the increase in chimney height is necessary before the same rate of fuel consumption can be accommodated without the assistance of some auxiliary mechanical-draft equipment.

Although for low rates of fuel consumption chimneys for bituminous coals can be little if any less tall than equivalent chimneys for anthracite, if combustion of fuel is to be as complete in one case as the other, the reduction in necessary height increases rapidly with an increase in the rate of fuel combustion. The general custom of employing continually higher rates of fuel combustion therefore makes the value of bituminous and semibituminous coals more and more pronounced, and there can be no question but that the use of these fuels will become almost universal for power-house purposes, even in localities from which they have formerly been excluded by strict "smoke nuisance" laws and penalties.

ALL CHIMNEYS SHOULD BE AMPLY LARGE

Owing to the usual more rapid combustion of bituminous coal, the importance of making the cross-sectional area of the stack adequate is not quite so marked as in the case of chimneys for anthracite. Nevertheless, it is always of greater importance to make the stack area large enough than it is to make the chimney tall enough. A system of mechanical draft can always be installed to make up any lack in chimney height, but the cross-sectional area of the stack must invariably be ample to accommodate the largest possible volume of products of combustion, when the fires are being driven at the utmost, without undue acceleration of the speed of the gases through the boiler passages. This maximum velocity of the gases is controlled, of course, by the boiler proportions, but this does not alter the fact that the chimney must have ample capacity to accommodate the boiler or boilers which it serves. A stack too small in cross-sectional area throttles the gases and renders forcing impossible.

Extracts from a Superintendent's Diary

I have a way of recalling lines of poetry on occasion without apparent reason and without being able to remember where or when I happened to read them. Today, for example, I began the day by recalling the line, "Horrible is the curse in a dead man's eye." I haven't a ghost of an idea where I got it; but be that as it may, I got it from something that I read years ago, and it has come back to me for some unexplainable reason, and I haven't been able to get it out of my thoughts.

During the morning Sid McGee, one of our miners, came by the office to notify us that he wanted to turn in his check numbers; and when we asked him why he had decided to leave, he said that he couldn't stand the idea of working in the room where his "buddie" had been killed and the foreman wouldn't consent to giving him a transfer.

Unconsciously I gave utterance to the quotation that had come to me earlier in the morning, "Horrible is the curse in a dead man's eye." Sid straightened up as if he had touched a live wire. "That is it, Mr. Thompson; my God, that's it!" he said. "But you are the first man I have talked to who knew how to express it."

Of course I was completely taken by surprise, just as Sid was, and nothing that I could say after that could convince him otherwise than that I was as superstitious as any human being could be. Under the circumstances there was nothing left me to do but arrange matters so that Sid was given a new working place.

After he had gone I tried to dismiss from my thoughts the quotation and the adventure that it had inspired; but try as I might I found it impossible to do so.

All through the day a string of deaths caused by carelessness on the part of others came flitting through my brain, and associated with each image was an image of a dead man's eye as the poet must have conceived it. Yes, the curse of a dead man's eye must undoubtedly be a terrible reality if it reaches the careless one for whom it is intended, but it is doubtful if that happens often. The more's the pity, since one or two personal adventures in each community would unquestionably have a wonderfully sobering influence on the entire citizenship.

The more I thought about it, the more I became impressed with the idea that possibly miners' superstitions could be traced back to well-authenticated facts; at any rate, I soon worked myself up to a state of mind where anything seemed possible. While in that condition I began to recall some of the adventures that had been related to me by miners in the past, and also the lack of sympathy that I had shown them when they had related their fears to me; I resolved then and there never again to make light of any man's imaginings.

Just as I was leaving the office at the close of my day's work, further testimony was brought to me of the "curse in a dead man's eye." Young Mrs. Prince came rushing to the office to tell me that her neighbor's husband, Tom Landrum, had gone stark mad, and they could not control him. Tom had run his locomotive past a red light and killed two men only two days before, and his own life had been hanging in the balance ever since; and now in spite of his terribly crippled body, he was probably trying to fight his way past the "curse in a dead man's eye."

The Labor Situation

SYNOPSIS—The Indianapolis convention writes a wage scale which calls for a 10-per cent. increase in tonnage rates and dead work and a 20-per cent. increase in day wages. The international organization owes \$874,860 to the district treasuries, but this is only about \$2.45 per member. A general strike would mean defeat, but not because of this deficit. A concentration of effort in a single district is the only feasible plan for obtaining victory by a strike.

The biennial convention of the United Mine Workers of America, at Indianapolis, Ind., opened on Jan. 18 with about 1,180 delegates present, according to the declaration of the credentials committee. The number later increased to 1,222 delegates, having 3,095 votes and representing 1,281 locals. Two years ago at the biennial convention there were 1,511 delegates, but some of the unions endeavored this year to save expense by joining in the nomination and election of their representatives.

President John P. White opened the meeting with a greeting to the delegates and then turned the gavel over to Otto Ray, president of the Indianapolis Central Labor Union. The speakers who followed were Father Gavisk, of one of the Indianapolis Roman Catholic churches, and W. A. Pickens, city counselor of the same city, who spoke on behalf of Mayor Bell; City Judge James C. Deery, ex-Mayor Charles A. Bookwalter, Andrew Smith, of the Eagles, and Frank T. Hawley, a labor leader and ex-president of the switchmen's union.

White Soon Shows His Power Over Convention

President White again took charge of the meeting and appointed committees on constitution, on resolutions, on appeals and grievances, on officers' reports, on the wage scale and on rules and orders. The scale committee was nominated by the president. Two years ago power to make the selection was taken from him and the scale committee was elected by the whole house. But the change was not made constitutional, and this year the old system was followed—a proof that confidence is reposed in the president.

The wage-scale committee was chosen with exemplary conservatism. Van Bittner, president of the Pittsburgh district (No. 5), and Frank Farrington, president of the Illinois district (No. 12), led the list. They are sound and safe men; in fact, Frank Farrington is said to have declared that the Illinois operators could not afford to grant an increase in the wage scale. That is a questionable statement, but it shows that Frank Farrington realizes that the operators must at least break even in their business or the miners will suffer.

Roll Call Restricted to Reasonable Limits

The afternoon opened with a battle. James F. Moran, president of the Iowa district (No. 13), the chairman of the committee on rules and order of business, brought in a report on the method to be followed in the conduct of the meeting; and providing that a roll call could not be ordered by less than a vote of 300 members. A roll call consumes so much time that it seemed desirable to the convention to reduce such expensive expressions of opinion to the lowest possible limits.

But the socialists and trouble-makers desired to have the provision such that they would be able to secure a roll call on every occasion they chose. Delegate Adolf Germer, from Illinois, who believes that J. P. White should be disciplined, was strongly opposed to a ruling which required him and his friends to show a strength of 25 per cent. before a vote could be taken. He urged that there were fewer delegates this year, and yet 50 men were allowed in 1914 to demand a roll call. The answer was simple. The rule of the preceding convention was found to be opposed to the best interests of the organization, and it was made quite evident at the last biennial meeting that calling the roll at the demand of a few delegates delayed proceedings unnecessarily in the interest of a few irreconcilables. The report of the committee was accepted by a viva voce vote.

Van Bittner introduced a resolution denouncing Federal Judge Dayton for issuing injunctions to prevent miners from joining the union. The resolution stated that the congressional judiciary committee ascertained at its hearing that Judge Dayton was a stockholder in mining companies in his

district. The resolution declared that Dayton was unfit to sit as judge in cases against coal miners. The resolution also condemned the Congressmen from West Virginia who have sought to prevent the impeachment of the judge and pledged the miners to oppose them in the future. Van Bittner stated that the impeachment of Judge Dayton had been dropped, but he hoped that the resolution would revive the action against him. The resolution was unanimously adopted.

David Wilson, of Illinois, introduced a resolution, which was adopted, demanding that the wage scale require that all operators accept the provisions of the workmen's compensation law which are now permissive. In order to avoid the ruling that such laws restrict the freedom of contract guaranteed by state and federal constitutions the compensation laws are made merely permissive. They fix the liability rate for all operators voluntarily coming under the operation of the law and provide that those who refuse shall be subject to an unspecified liability and shall be excluded from advancing the three common-law defenses—contributory negligence, assumption of risk and the fellow-servant doctrine.

Orators and Socialists Are Not Silenced

The miners then voted in favor of woman suffrage, but two resolutions which followed did not receive a favorable vote. One provided that when mines shut down \$5 should be paid to the idle men every two weeks instead of every 45 days; that is, the rate of award should be increased threefold. This was referred to the Illinois district (No. 12), being a local and not a national matter.

One resolution tried to head off the speeches of politicians and others who were not delegates to the convention. This would have silenced Mother Jones, Van H. Manning, Frank J. Walsh and Terence V. Powderly, and the prospect of losing so much oratory did not appeal to the delegates.

But the greater waste of time in these conventions arises from quarrels, and one delegate offered a resolution which placed on disputants the expense caused by debates and disputes before the convention respecting private grievances and petty jealousies. The resolution was not adopted, because if enforced it would prevent an expression of opinion. It is difficult to define "private" and "petty." Too liberally interpreted, the ruling might result in the confiscation of wages or salaries for a year or even a lifetime of some man who was performing a service to his fellows. The delegates rightly decided not to put the gag on the mouths of their associates.

A resolution from Duquoin, Ill., demanded better health laws at mines and urged legislation requiring the operators to provide waiting houses at every plant. But this was referred to the district conventions. A resolution had been introduced by a Barnesboro, Penn., union, providing for the amalgamation of central Pennsylvania (District 2) with western Pennsylvania (District 5). The resolutions committee urged that this be referred to the district conventions, and in this the meeting concurred.

All these were perfectly inoffensive resolutions, but the socialists and other malcontents presented a few which were warranted to galvanize the meeting into life. One urged that the meeting should have been held at St. Louis as arranged and not at Indianapolis, and another declared the expenses of the international organization were excessive.

Plan To Muckrake the United Mine Workers

The exact wording of the resolution was as follows: "That this convention elect a committee of three from among the delegates who shall have power to go over all the records of the international office, including the expense accounts of the elected and appointed officials, the time they spend in the field, and whether their activities were satisfactory to the members in the district in which they worked; that any officer affected by the result of this investigation shall have the right to explain in writing any apparent extravagance or inactivity, or apparent lack of activity, and that this committee after due investigation and consideration shall make a report in writing of the findings, together with such recommendations as will tend to a greater economy and efficiency, said report to be sent to all local unions in good standing."

The proposition was, in short, one to muckrake the United Mine Workers of America and to expose its alleged failings from a socialistic standpoint. Duncan McDonald, the secretary for the Illinois district (No. 12), made a speech at the opening of the afternoon session attacking the international organization and alleging that circulars were sent out from international headquarters in an attempt to create a prejudice against him when he sought reelection from the unions.

On the third day of the meeting, Jan. 20, the session opened with the fight on this resolution. The debate on this question lasted eight hours in all and was closed by Mother Jones, who though not a delegate took the platform and ordered Germer and McDonald to come up and shake hands with White. When "kidded" by Vice-President Hayes, she said she was "a delegate to every miners' convention." Though the two scolding delegates shook hands with White, Hayes and Green, they stood by their resolution which was at once put to vote and defeated. It had only a few supporters.

Countless Resolutions Seek Acceptance

Other resolutions introduced were: One by Dave Wilson, of O'Fallon, Ill., against preparedness and the purchasing of munitions from plants under private ownership; one from Nanty Glo, Penn., calling for mass meetings on Apr. 1 to protest against militarism; one from Des Moines, Iowa, directing state and national conventions to petition the legislatures to pension old and crippled miners; one from Bay City, Mich., urging that the union provide a home for old miners; one from New Philadelphia, Penn., favoring government old-age pensions for persons more than 60 years old, and one from Des Moines, Iowa, calling for a national old-age pension law under which every man or woman over 50 years old who has lived in the United States at least ten years would receive a pension at the rate of, 50 to 60 years \$10 a month, 60 to 70 years \$15 a month, above 70 years \$20 a month.

There were several resolutions for old-age pension laws of various kinds. From Hanna, Wyo., came a proposal that the union buy a farm for old and crippled miners, the products to be used for relief in case of strikes and lockouts and to be sold to the stores operated by members of the organization. Keota, Mo., wanted the union to start a death and disability fund. Another resolution desired that the United Mine Workers affiliate with the Western Federation of Miners. Saginaw, Mich., urged that small and isolated districts should not be bound by the policy committee, but negotiate separately for better working conditions.

Illinois men desired to pay their per capita tax to District 12 until the \$250,000 which the United Mine Workers owed that district be paid. Charleroi, Penn., was in favor of the union owning its own headquarters and printing plant. Other resolutions favored a policy of having all agreements expire on the same date. A Fernie, B. C., resolution called for a committee to work out a new basis of representation. But there were other resolutions in which it was proposed, respectively, that there should be one delegate to each 200 members and one delegate to every 1,000 members.

Powder Making and Nationalizing Railroads

West Terre Haute, Ind., desired that the union manufacture blasting powder for its members. West Frankfort, Ill., urged that a referendum be taken to see if the United Mine Workers should discontinue its relations with the American Federation of Labor. West Newton, Penn., proposed that no financial or moral aid should be extended to any organization debaring anyone from membership for race, creed, color or nationality.

McDonald, Penn., desired the nationalization of railroads. An Ellsworth, Penn., resolution sought to have the firebosses appointed by the state. The same delegation urged that the Socialist party be indorsed by the miners. Most of the socialistic proposals came from Pennsylvania, and they were voted down easily.

On Friday, Jan. 21, the delegates devoted most of the day to hearing the report of the committee on appeals and grievances and, in straightening out the difficulties experienced by the rank and file of the organization.

On Saturday, Jan. 22, the main interest exhibited itself in old-age pensions. The miners from the president down favored this provision for the declining days of the workmen, but the question was debated whether an attempt to pass a Federal bill was worth while, seeing that it would inevitably be declared unconstitutional. Many of the delegates not being clear as to the difference between attempting to override the Federal Constitution relative to state rights and trying to regularize a bill in a single state, urged that workmen's compensation laws were at one time declared unconstitutional, yet nevertheless they are now passed and are likely to withstand the inspection of the Supreme Court.

No Jobs in Colorado for Partially Disabled

Edward L. Doyle, of Colorado, stated that miners with only one eye were excluded from work in that state because the loss of the second eye would make the company liable for a total disability. He seemed to think that a Federal bill could make the operator employ a man who is not fit to work in a mine and could make that employer pay for two eyes when only one was lost. Most mines are unsuitable places for a man who does not have all his faculties.

Frank L. Farrington, of Illinois (District 12), proposed that the resolution be changed so as to commit the union merely to the sentiment of old-age pensions and to urge the advocacy of the innovation on the members in all states. This was finally adopted by 526 ayes and 461 noes.

In the morning a resolution was submitted by miners of Central City, Ky., urging the international organization to make a supreme effort to organize the nonunion miners of Hopkins County, Kentucky, and also in the western part of the state. Oscar Smith, an international organizer, declared in vague terms that in one county of Kentucky nonunion miners load a room of coal, about 22 tons, for \$1.70, or about 8c. per ton. "Just across the line," said Smith, "the union miners get \$5.50 for this same work." The resolution was adopted.

On Monday, Jan. 24, the miners passed a resolution opposing the appointment of ex-President William H. Taft to the Supreme Court, characterizing such a nomination "as an unfriendly act toward the toiling masses of America."

F. P. Walsh Shows that He Cannot Be Satisfied

Frank P. Walsh spoke at the morning session. That worthy made one of his usual unfair speeches. Condemning J. D. Rockefeller for being a director of the Colorado Fuel and Iron Co. while not concerning himself about the fate of the workmen of that company, he nevertheless blames him when the Rockefeller Foundation engages McKenzie King to find out how peace and satisfaction can be assured and particularly scores King because he is made a director of the Colorado Fuel and Iron Co. Surely that fact proves the interest of the company in the welfare of the men.

One moment Walsh denounces the lack of interest shown by a director. When that director secures another to look after the work which has been neglected Walsh is wrath again. Surely it is capital he opposes and not what capital does. In fact, the appointment of McKenzie King, he says, was a challenge of big business to the government of the United States in one of its most important functions. If capital does nothing or not as much as its detractors wish, it is excoriated; if it acts, then it is challenging Congress. Walsh said that McKenzie King by refusing to answer Walsh's questions defied the government; so also for that matter did the President, Woodrow Wilson, in the same investigation. In the afternoon Van H. Manning, director of the Bureau of Mines, read a paper on the aims of the bureau.

Vote Approves the "No Suspension" Rule

The report of the committee on officers' reports was made on Jan. 25. It indorsed John P. White's recommendation that if by Apr. 1 there should be no agreement there should nevertheless be no suspension. Such cessation of work should be delayed, he stated, until it appeared unlikely that any agreement could be reached. It was argued that to work on was less injurious to the women and children who would suffer much from a suspension; that the delay helped the operators to keep their customers, whereas a suspension would give trade to the nonunion operators who might later be able to retain it. The officials of the union all favored the "no suspension" rule, and the opposition was not numerous nor important, but it was able to keep up a flood of oratory.

The scale committee commenced its sessions on Jan. 26 by electing Van Bittner president and Frank J. Farrington secretary.

On Jan. 27 Terence V. Powderly addressed the convention, and that body discussed reducing the size of the convention from about 1,200 to the neighborhood of 400. John P. White wants one delegate for every 1,000 members. The convention is extremely unwieldy, but it is certainly an education to those who attend it; and it is questionable if the large attendance does not make for a general clarification of ideas in the membership and so help both officers, miners and even the operators. However, the miners claim that a large delegation makes it possible for operators' spies to enter the convention and lead in the cheering and take part in the vote.

Miners' Delegates Start Some More Scraps

Another matter for debate was whether Alexander Howat, president of the Kansas miners (District 14), was entitled to vote until he had cleared his record of the charge of having received bribes. Germer tried to embarrass White by urging that action on Howat's right to vote be delayed till Holt could appear before the convention. Holt was secretary of the union in District 14, but has not been reelected. He was charged with complicity in the bribery matter.

On this same day Edward L. Doyle, of Denver, secretary of the Colorado miners, made an attack on President White. He criticized his management of the Colorado strike and added that John D. Rockefeller had been more consistent than White, for while the latter had withdrawn relief Rockefeller

had ordered company stores opened to provide food for the families of the striking miners.

John P. White was strikingly victorious in the viva voce vote, the delegates even ordering Doyle's remarks removed from the record. Frank Farrington said that as long as Doyle remained in office in Colorado the union in Illinois would not contribute a cent to the support of the Colorado miners.

A Victory for Publicity in Conventions

An attempt was made to put out Thomas L. Lewis, former president of the United Mine Workers, who was discovered in the gallery. "Tom" Lewis is now the employee of an operators' organization, and that fact was pointed out by John O'Brien, a delegate from West Virginia. But the union is holding its meeting in public, and John Lewis, of Illinois, who was presiding, very wisely ruled O'Brien's motion out of order. It is creditable to the miners that their biennial meeting is so open and aboveboard. However, the scale and other committees meet behind closed doors.

Convention's Wage Scale Is Contradictory

Toward the evening the scale committee read its report. Of course the demands of the anthracite tridistrict convention Sept. 7 to 10 were reaffirmed and indorsed, but nevertheless the opening words of preface make no reference to the anthracite scale and lead everyone to infer that the first scale given is intended to apply to both fields. It seems quite generally thought that the anthracite demands are unreasonable and that 10 per cent. is a more orthodox faith to pin to than 20 per cent. The reader will note a reference to some matters not in issue in the bituminous fields which appear in this scale and suggest that it is really and truly the anthracite as well as the bituminous scale of the convention.

The demands are: (1) All coal must be weighed before being screened and must be paid for on a mine-run basis. (2) A 10-per cent. increase per ton at the basing point. (3) A 10-per cent. increase on all deadwork and yardage. (4) A 20-per cent. increase on all day labor. (5) A uniform day and wage scale for all classes of outside and inside day labor. (6) A proper readjustment of the machine differential. (7) An 8-hr. day from bank to bank. (8) All local inequalities and internal differences shall be referred to the various districts affected for settlement. (9) The contract shall be in effect for a period of two years. (10) Weekly pays. (11) Every Saturday an idle day.

Some Provisions the Operators May Fight

The run-of-mine requirement will be bitterly contested where payment for screened coal only, as in western Pennsylvania, is the recognized method for compensating labor. Demand 1 is therefore quite likely to make discord between the operators at Mobile, Ala., when the joint conference is held Feb. 8. In central Pennsylvania run-of-mine measurement has been the usual basis for payment.

Weekly pays will involve doubling the clerical force at the mines. It may make the miners more independent of the company stores, and some of the more sordid minds will see in this an objection to the requirement. Demand 6 is

objectionably vague—"a proper readjustment of the machine differential at the basing point." If it means giving advantages to up-to-date machines of large and proved capacity over old-fashioned machines of low output, the proposition might be received by the plaudits of operators, miners, the public and the efficiency experts. But it is unlikely that this is meant. Perhaps, however, it may be successfully achieved if it is properly argued at the conferences.

Saturday's session, Jan. 29, was occupied by an indorsement of Louis Brandeis, a refutation of Samuel Gompers' statement that the workingmen favor preparedness, a vote of support for the federal civil service compensation bill and a discussion of Frank Farrington's motion to deduct \$2 from each member in four installments until the \$874,860 borrowed by the international organization for aid in strikes is returned to the districts.

On Monday, Jan. 31, the United Mine Workers at the advice of their leaders refused to forbid membership in the militia to those who belong to the organization. A resolution was passed condemning the use of military forces and deprecating the hiring of armed gunmen by corporations to break strikes.

What Harm Can the Union's Debts Do?

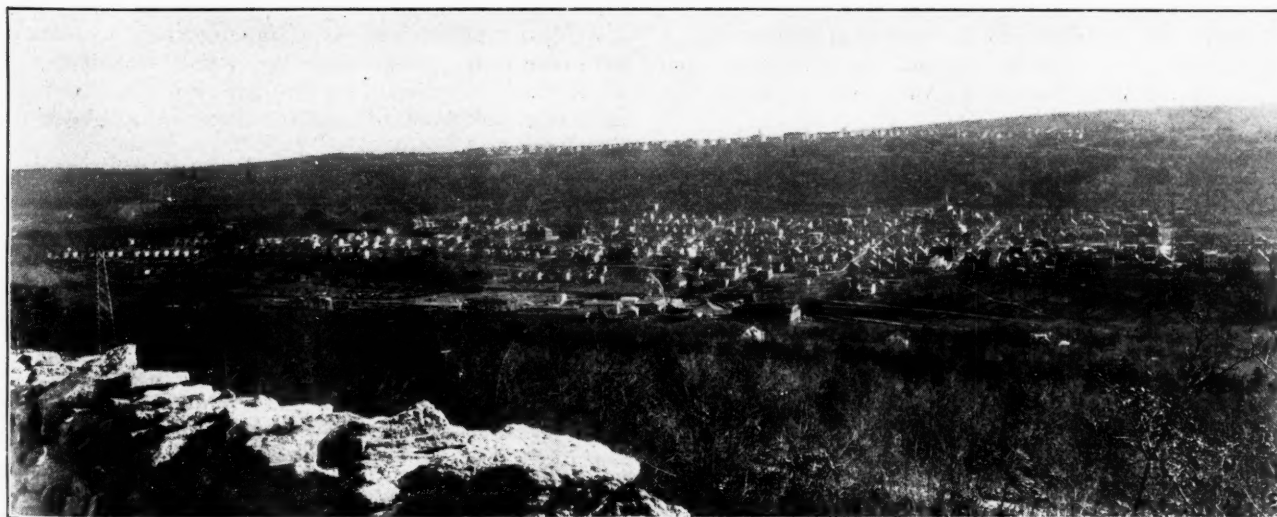
This review may well conclude with a few essential facts regarding the financial situation. The union borrowed from 13 districts during the last two years a total of \$874,860 and paid out to 7 districts \$1,256,450. These seem tremendous figures, but the total membership is 361,027, so the loans to the union only amount to \$2.45 per member and the loans to the districts to about \$3.48 per capita. Even if the union had the \$3.48 yet, which it has not, it would not be any support in a general strike or suspension.

The backing in such a dispute comes, not in reserves, but in individual credit and outside earnings. Above all these is the help idle districts derive from those which are working. It is quite clear that \$3.48 per capita will not keep a strike going a week. That is why the "no suspension" rule looks good to the union. If the anthracite and bituminous mines both go on strike together there can only be one end—starvation and union bankruptcy.

In the year ended at the close of November, 1915, the income of the international organization was \$1,858,604.64, about \$5.15 per member. The tax was \$935,359.12; the assessments of 50c. a month per member brought in \$776,447.90; the United Mine Workers' "Journal" earned \$30,680.59; supplies were sold to the aggregate of \$4,375.57; miscellaneous receipts aggregated \$111,741.46, making in all \$1,858,604.64. But the expenditures were \$1,776,984.33.

United Mine Workers' "Journal" Loses \$50,000

The United Mine Workers' "Journal" expended \$80,503.37 and made \$30,680.59. The loss of \$50,000 in one year shows that it is impossible to make both ends meet if the paper is to sell for \$1. The proposal is to make the members buy the paper whether they so desire or not. But it is doubtful if even then the "Journal" can be printed and circulated for \$1 a year, so great is the cost for paper, ink and transportation.



GENERAL VIEW OF LANSFORD, PENN. CENTER OF ACTIVITIES OF THE LEHIGH COAL AND NAVIGATION CO.

Misleading Information About Anthracite Demands

SYNOPSIS—The demands of the Mine Workers and explanatory notes showing why it is said that they are entitled to receive them. The declarations form a paster insert in Dr. Scott Nearing's "Anthracite." The mistakes in the statements are set forth in the end of the article.

The demands which the anthracite mine workers will present to the operators when the present agreement expires on Mar. 31, 1916, are here set forth in full, together with a brief explanation of each:

Demand 1—We demand the next contract be for a period of two years commencing Apr. 1, 1916, and ending Mar. 31, 1918, and that the making of individual agreements and contracts in the mining of coal shall be prohibited.

Explanatory Note 1—The cost of living and the cost of production are ever changing. Contracts for more than two years are unfair to all concerned. No one can justify the making of individual contracts—which in effect would violate the spirit of the general contract between miners and operators. There can be no motive for such agreements—except the desire to take advantage of the necessities of the individual miner.

Demand 2—We demand an increase of 20 per cent. on all wage rates now being paid in the anthracite coal fields.

Explanatory Note 2—Wages that were below normal increased $5\frac{1}{2}$ per cent. in 12 years; food, 40 per cent. Surely this constitutes a basis for an even greater demand than that which is made.

Demand 3—We demand an 8-hr. day for all day labor employed in and around the mines, the present rates to be the basis upon which the advance demanded shall apply, with time and one-half time for overtime and double time for Sundays and holidays.

Explanatory Note 3—A workday of more than 8 hr. is un-American. From bed to work and work to bed belongs to an age that has long passed. Anthracite miners are paid by the hour. The reduction of the workday from 9 to 8 hr. will therefore not increase mining costs.

Demand 4—We demand full and complete recognition of the United Mine Workers of America of Districts Nos. 1, 7 and 9 Anthracite.

Explanatory Note 4—Complete recognition of the union will eliminate local strikes, promote peace, create the basic organic force necessary for the speedy settlement of disputes and work generally for the mutual welfare of all concerned.

Demand 5—We demand a more simplified, speedy and satisfactory method of adjusting grievances.

Explanatory Note 5—The present system of adjusting differences growing out of contract provisions between miners and operators is "antiquated." The need for a more simplified and speedy arrangement is imperative.

Demand 6—We demand that no contract miner shall be permitted to have more than one working place.

Explanatory Note 6—The "contract" system in mining is the same as the "sweatshop" system in manufacturing.

In both cases the evil results from the ability of the contractor to exploit his helpers. Uncurbed, the system decreases both the earnings and opportunities of the vast majority of efficient and willing workers and concentrates in the hands of the few a part of the earnings of the many.

Demand 7—We demand that the selling price of mining supplies to miners be fixed on a more equitable and uniform basis.

Explanatory Note 7—A fair profit—that's all.

Demand 8—We demand that wherever coal is mined by the car all coal shall be weighed and be paid for on a run-of-mine basis by the ton of 2,240 lb. and shall be paid for dirt and rock.

Explanatory Note 8—At present coal is paid for by the car, which may hold anywhere from $2\frac{1}{2}$ to $4\frac{1}{2}$ tons and whose capacity is always a matter of guesswork. The present system of paying only for clean coal is unjust, as it makes the miner the victim of chance "faults" in the veins, and is inequitable in that it promotes favoritism in the assignment of working places.

Demand 9—We demand a readjustment of the machine mining scale to the extent that equitable rates and conditions shall obtain as a basis for this system.

Explanatory Note 9—Machine mining in the anthracite region is not extensive, but gives promise of rapid growth. The miners want a just scale for machine work.

Demand 10—We demand that the arrangements of detailed wage scales and the settlement of internal questions both as regards prices and conditions be referred to the representatives of the operators and miners of each district to be adjusted on an equitable basis.

Explanatory Note 10—Miners and operators constitute the contracting parties for the purpose of mining coal. It is absurd to refer differences arising from this contractual relationship to parties other than their representatives.

EDITORIAL COMMENT ON EXPLANATORY NOTES

It may be said editorially that since 1902, when the Anthracite Strike Commission made its awards, no such individual contracts such as explanatory note 1 mentions have been made, except where new mines were opened or where machines were installed. All rates when modified have been subjected to uniform change throughout the anthracite field.

The miners seek, therefore, not so much to have the contract changes made uniform, for that is secured, but rather are desirous of having them made with the United Mine Workers of America. Demand No. 10 shows how little real desire there is for solidarity: Perhaps the anthracite miners do want to have their biennial scale arranged by the delegates of all three districts meeting with the representatives of the operators from all over the anthracite region, but they want the interpretation of the scale made locally. So to speak, they would have the constitution made in a tri-district meeting. But they want the instrument thus made interpreted by districts. They want, in fine, a common constitution and a separate supreme court for each district.

Demand 1 for some mysterious reason disguises the intention to obtain recognition of the United Mine Workers of America. Perhaps the collaborators on the document desired to leave leeway for a backdown in case the officials should find they could not obtain the recognition they craved. In any event the Mine Workers have no reason to dread individual contracts. They have not had them since 1902. Of course, they will not be made in 1916. Matter forming explanatory note 2 is treated in full on page 208 of last week's issue under the head of "Scott Nearing's Anthracite." The increase in cost of food is also somewhat incompletely treated in the same article.

In explanatory note 3 it is stated that anthracite miners are paid by the hour. They are not so paid, as is conclusively shown in explanatory note 8. If they were, it might well be considered that it really did matter to the operator how long they worked—8 or 9 hr.—if the operator is asked to pay a 9-hr. rate for an 8-hr. day. The demand of the daymen is somewhat ambiguous, but the way indicated is that in which it is usually interpreted. The day workers are not urging a lower rate of pay per day when they ask for shorter hours. The miners are paid by the ton or car, and as far as they are concerned the length of the day is not a matter of paramount importance to the operator. If he could induce them to work as long as 8 hr., he would be pleased.

The scale change under demand 3 does not apply to them, but it refers solely to the other mine workers whose pay depends on time, not on output. It is hardly necessary to state that if a 9-hr. rate is paid to the day workers for an 8-hr. day the result may well be an increase in the cost of production.

Explanatory note 4 is untrue. In many bituminous mines the union has been recognized for years and there have been frequent strikes despite the agreements forbidding such action. The operators are powerless to prevent these breaches of contract and the mine workers' officials declare they cannot prevent them.

Explanatory note 5 has a good deal of truth. The present Anthracite Arbitration Commission is well constituted and would do admirable work if the men on it had nothing else to do but attend to their arbitral duties.

Explanatory note 6 is contrary to common sense. The miner's duty is to fire shots and set timbers with the help of the laborer. He is practically a boss. The demand says that every coal miner shall have a boss sitting over him and drawing the bulk of the pay. That is not an American condition, and as Doctor Nearing says it is only found in the anthracite region. The laborer is exploited enough already, for he does the work and the miner-boss draws most of the pay. A little more system would help rather than hinder the prosperity of the anthracite mine workers generally and would lower the costs in the industry.

Explanatory note 8 is not fair to the operators. Only by paying for clean coal alone or by limiting the amount of dirt permitted can the operator induce the miner to keep dirt out of his coal. The just scale for machine mining called for in demand 9 is generally thought to be so high as to discourage machine mining as it has been effectually made undesirable in England. The same scheme has been tried in the bituminous region. A just rate which will make fair wages for the machine miners is of course not to be condemned and if proposed will be accepted.

Explanatory note 10 misstates the issue. Demand 10 practically condemns J. P. White, president of the United Mine Workers of America, and his cabinet. In the bituminous regions they are seeking an interstate agreement and are opposed to separate district arrangements. Similarly it is advisable in the anthracite region that the same system should be adopted; for if one district is compelled to make a concession, other districts should be made to keep in line. This demand 10 is not one which is popular with the mine leaders, nor is it in accord with demand 1, which says that "the making of individual agreements and contracts should be prohibited." The scale is like a pet dog in a moment of abandon. In sheer willfulness it is trying to chase its own tail.

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"Proportional" Freight Rates

An instructive decision relating to coal-freight rates was recently announced by the United States Circuit Court of Appeals, Fourth Circuit, in the case of Hocking Valley Ry. Co. vs. Lackawanna Coal and Lumber Co., 224 Federal Reporter, 930.

Three railroads affording transportation of coal from the Kanawha district to Toledo established a joint proportional rate of 97c. per ton "on cargo coal when for lake shipments beyond" Toledo. The rate on shipments having final destination at Toledo was \$1.68, made up of a local rate to Charleston, W. Va., plus a joint rate from there. A fuel company shipped coal ostensibly for shipment on the lakes, but it was, with the company's direction or consent, delivered at Toledo for use as fuel on vessels plying the lakes. The lower rate was paid, and the railway companies sued to recover the excess of the higher rate. The United States District Court held that the lower rate applied, but the Circuit Court of Appeals reversed the decision, saying:

"A 'proportional rate,' as the term implies, is simply a part of a through rate. It is the share of the aggregate charge from origin to destination which one or more of the carriers accepts for performing a definite portion of the whole transportation service. . . . The propriety and lawfulness of proportional rates to the point of transfer which are less than local rates to that point have frequently been affirmed by the Interstate Commerce Commission and are sanctioned by considerations of public policy. . . . It is plain that coal consigned to Toledo as a final destination was subject to an aggregate rate of \$1.68, including the unloading charge of 11c., and it is equally plain, in fact and in law, that coal which went into the bunkers to be used for vessel fuel was coal of which Toledo was the final destination, because in that case its transportation as an article of commerce ended at Toledo. . . . The reasonableness of the \$1.68 rate is a question for the commission and not for the courts."

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The Annual United States Mineral Production has five times exceeded \$2,000,000,000. In a period of 33 yr., according to George Otis Smith, the production and consumption of coal per capita have increased from less than 1½ tons to nearly 6 tons—an increase of nearly 357 per cent. Similarly the per capita production of iron ore increased 337 per cent.; petroleum, 391 per cent.; copper, 1,200 per cent.; cement, 2,087 per cent. Gold and silver increased only 23 and 22 per cent. respectively, but lead increased 125 per cent. and zinc 638 per cent. This is a record of growing industrial activity of which mining men of this generation may well be proud.

Appropriation Estimates of the Bureau of Mines

The United States Bureau of Mines is asking for an appropriation of almost a million dollars in 1917, the increase asked being roughly a quarter of a million, the biggest item being for mining experiment stations.

A large item, \$135,000, is really not for the benefit of the Bureau of Mines, but on behalf of the army, the navy, the post office and other services. These departments should pay the Bureau of Mines for services performed.

APPROPRIATIONS SOUGHT BY SECRETARY F. K. LANE FOR BUREAU OF MINES IN 1917

| | Appropriations, 1916 | Estimates, 1917 | Increase |
|---|-------------------------|--------------------|-----------|
| General expenses, Bureau of Mines | \$70,000 | \$74,800 | \$4,800 |
| Investigating mine accidents..... | 347,000 | 347,000 | ..... |
| Testing fuel..... | 135,000 | 135,000 | ..... |
| Mineral mining investigations..... | 100,000 | 100,000 | ..... |
| Investigations, petroleum and natural gas..... | 35,000 | 70,000 | 35,000 |
| Mining-experiment stations..... | ..... | 75,000 | 75,000 |
| Removing mining-experiment station, Pittsburgh, Penn..... | 57,300 | 42,700 | 14,600* |
| Care and maintenance new buildings, Pittsburgh, Penn..... | ..... | 17,220 | 17,220 |
| Purchase of three additional mine-rescue cars..... | ..... | 53,280 | 53,280 |
| Equipment of three additional mine-rescue cars..... | ..... | 13,500 | 13,500 |
| Operating new mine-rescue cars..... | ..... | 54,810 | 54,810 |
| Inspecting mines in Alaska..... | 7,000 | 7,000 | ..... |
| Books and publications..... | 1,500 | 1,500 | ..... |
| Land leases, etc., for mine-rescue cars..... | 1,000 | 1,000 | ..... |
| Totals | \$753,800 | \$992,810 | \$239,010 |
| Net increase in appropriation desired..... | | | \$239,010 |

*Decrease.

COMING MEETINGS

Joint Meeting of Anthracite Operators and Miners will be held in New York City, Feb. 21.

American Concrete Institute will hold its annual meeting in Chicago, Ill., Feb. 14-17, 1916.

Joint Interstate Meeting of Miners and Operators of the bituminous region will be held at Mobile, Ala., Feb. 8.

Southern Appalachian Coal Operators' Association will hold its next meeting at Nashville, Tenn., Feb. 8, 1916. Secretary, J. E. McCoy, Knoxville, Tenn.

American Society of Mechanical Engineers will hold its spring meeting at New Orleans, La., Apr. 11-14, 1916. Secretary, Calvin W. Rice, 29 W. 39th St., New York City.

Engineers Society of Northeastern Pennsylvania will hold its 19th annual dinner at the Hotel Jermy, Scranton, Penn., Thursday evening, Feb. 10, 1916. Secretary, T. F. McKenna, Scranton, Penn.

American Institute of Mining Engineers will hold its 112th and annual business meeting at the headquarters of the institute, 29 West 39th St., New York City, on Feb. 14-17, 1916. Secretary, Bradley Stoughton, New York City.

Canadian Mining Institute—The eighteenth annual meeting of the institute will be held at Ottawa, Canada, on Wednesday, Thursday and Friday, Mar. 1, 2 and 3, with headquarters at the Chateau Laurier. The Eastern Canadian Passenger Association has conceded special transportation privileges to members and their friends attending the meeting. Among the papers to be read are the following coal papers: "The Coal Situation in Canada," by W. J. Dick, and "The Coal Resources of Canada with Special Reference to the Metallurgical Industries," by J. B. Porter.



LOVE IN A COTTAGE

Who's Who in Coal Mining

Alfred E. Lister

Among the well-known men connected with the engineering side of the anthracite industry is A. E. Lister, efficiency engineer of the Hudson Coal Co.

The appointment of efficiency engineers by the larger hard-coal corporations marks an attempt on their part to eliminate waste of all kinds and to adopt methods that are especially suited to the economical production of clean coal. Practically all of the larger coal companies have paid this compliment to their engineering forces in that they have not gone outside of their local industry to secure men for the important work that these engineers have to perform.

Those who are serving the anthracite companies as efficiency experts are men who have had long experience in the field and who are wholly familiar with existing



A. E. LISTER

Efficiency engineer of Hudson Coal Co.

conditions. Following such a course the Hudson Coal Co. sought out Mr. Lister, its mechanical engineer, and shouldered him with the responsibilities of an efficiency expert.

Mr. Lister is of English parentage and was born in Carbondale, Penn. After learning the machinist trade he decided to take up a college course and prepared for Lehigh University by completing a period of special training at the Keystone Academy. He concluded his work at Lehigh in 1892, receiving the degree of mechanical engineer from this institution.

His first position was that of mechanical engineer for the Holmes Fiber Graphite Co., of Philadelphia, a concern engaged in making a self-lubricating bearing. This

company was later taken over by the Link-Belt Co. Mr. Lister entered the drafting room of the latter corporation, later serving in the estimating department.

In 1896 he came to Scranton as local representative of the Eynon-Evans Manufacturing Co., bronze founders. After spending a year in this work he entered the employ of the Delaware & Hudson Coal Co. as mechanical engineer, and continued in this position until he was appointed efficiency engineer in August, 1915.

In his present work Mr. Lister is concerned less than formerly with details of operation and devotes most of his time to investigations that have to do entirely with the efficiency of the processes. His present work, therefore, is more of an advisory nature, and it is as a consequence broader in scope than were his earlier duties.

He is a Mason of the 32nd degree, a Knight Templar and a member of the Shrine. He is also an active, enthusiastic member of the Engineers Society of Northeastern Pennsylvania, having served both as secretary and president of this organization.

It is rather interesting to know what fads or recreations busy men follow up when they have a little time to play. It is only natural that men who are actively engaged in business most of the daylight hours should seek something different from their everyday work when they are at leisure. Mr. Lister finds great pleasure in taking up the study of entomology, and when he tires of his investigations of insects, he finds further recreation in looking up a genealogy.

Mr. Lister is not the sort of man who splashes over in his show of affection for his friends, and he does not endeavor to seek companionship very far beyond his own circle of acquaintances; but those who know him best value his friendship all the more, for they know he is the kind of man that shows his loyalty and appreciation when the winds of adversity blow strongest.

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Mining Institute's Broad Scope of Work

The scope of the work of the Nanticoke District Mining Institute is indicated by a recent bulletin giving the widely diversified occupations of its 1,080 members. The following synopsis, which omits many of the subdivisions of occupations such as the variety of engineers, shows that information useful to every man connected with anthracite mining and many others is disseminated at its interesting meetings. This information is of use to a bratticeman, brakeman, butcher, breakerboss, blacksmith, carpenter, dockingboss, contractor, clerk, chemist, chargeman, cashier, driver, driverboss, electrician, engineer, foreman, fireboss, fireman, ashman, headman and footman, inspector, loader, laborer, machinist, merchant, miner, mason, manager, motorman, oiler, printer, pumpman, president, runner, shaftman, superintendent, surveyor, stableboss, timberman, weighmaster and surgeon.

Of this membership 470 are employed by the Susquehanna Coal Co., 462 by the Delaware, Lackawanna & Western, 59 by the Alden Coal Co., 57 by the Lehigh & Wilkes-Barre Coal Co., and 32 are not connected with any coal company. At the last meeting in the auditorium of the Susquehanna Coal Co. at Nanticoke the Delaware, Lackawanna & Western moving-picture play, "The Price of Carelessness," was shown by its author, P. H. Dever.

Editorials

"Identical" Wage Increases

Words convey just what we are in the habit of expressing by them, and nothing else can we usually derive from them. So when we want to put another perfectly permissible, even preferable, meaning on them, from the viewpoint of their origin and purport, we find that they will not bear that interpretation. Our ideas are so few and so inelastic that we do not give the terms their broadest value.

A uniform raise in wages would not mean necessarily, nor even preferably, a uniform percentage increase; but as we are in the habit of figuring out increases that way, some word has to be slightly stretched to cover the less usual idea. It may not be as fitting to use "identical" as it is to use "uniform," but being a word not generally used in this connection it appeals to the mind urging it to break into a new rut and to add another roadway to the single track hitherto traveled exclusively.

"Identical" will be used to mean equal in fact, not equal in percentage. If one group of operators paying 30c. for a 2-ton car raises wages 10 per cent., and another group paying 50c. per ton for mining increases them by the same percentage, the rise in wages is not in any real sense identical. One concern pays 1½c. more per ton, and the other 5c. more. The "uniform increase," as it is commonly stated, puts one concern 3½c. at a disadvantage. The identical increase would raise wages so that the two groups would still continue on the same competitive basis.

The operators in the event of an identical increase east and west, north and south will all have to meet, other things being equal, the same increase in cost. This identical increase should apply to the hourly wages of the day-workers as well as to the tonnage wages of the miners.

Sound Reasons for Wage Increase

The only trouble confronting the union operator when he would increase wages is the nonunion producer. What will he do? Will he see his men and say, "I can give you steady work if you are willing to go on working without an increase," or will he say merely, "I will grant you the same percentage increase as the men in other states are receiving?"

It is natural and not a sign of moral depravity, as some people try to aver, when the operator confronted by the union wants to know what West Virginia, Kentucky and Alabama will do. Will the ununionized parts of these states give no increase or only one which is equal in percentage with that in union districts, or will they be more generous and make the raise identical with the increase elsewhere, not merely per ton, but also per working hour?

The coming general increase in wage is indicated by the fact that so many businesses have already granted it. The mechanics first obtained an increase owing to the war.

This upset all orderly procedure and helped no one. It tended toward a general rise in wages which does not improve the wellbeing of the workmen nor decrease the profit of the employer. Such a rise does act as an aid, however, to an increase of imports and to prevent exporting. So it is not a healthful condition. Increases in wages are ordinarily only excusable in underpaid industries.

The oil men at Bayonne, N. J., soon followed the mechanics. Then the United States Steel Corporation and the Cambria Steel Co. raised wages, and now it is the Consolidation Coal Co. in Maryland. General business activity is raising the price of bituminous coal, especially in the Eastern States, and all prices are rising and stiffening with increasing prosperity and wage increases. On Feb. 1 the H. C. Frick Coke Co., W. J. Rainey, the Oliver & Snyder Steel Co., the Jamison Coal and Coke Co. and the Washington Coal and Coke Co. raised wages 10 per cent.

Thus several large corporations have given the miner a cue by raising wages. The miner is a little early in his demands, but he has the prospect of rising prices and lowered purchasing power to spur him on. So if he doesn't need more now, he may well be entitled to it before two years have flown.

But he does not need 20 per cent., and everyone must be glad to see that the bituminous miners are not asking for it. There is no call for the miners to seek such increases as will unbalance conditions. No rise whatever would not be fair; and the rise in Maryland, while reflecting credit on the Consolidation Coal Co., is less than is indicated by conditions; but on the other hand, too large an increase would call for imitators in other industries and should be deprecated. The miner should not strive to get larger wages than laborers of a like class.

Envious competition to get the biggest wage would put wages so high in this country that we would need a big tariff wall around us, and still the workingman would buy himself poor, for he would have to pay large wages to other workmen whenever he made a purchase.

But because 20 per cent. is too much, it does not follow that 10 per cent. should not be granted, and that, not directly because the country is doing well and can afford it, but because the miners need it if they would maintain their status.

Nevertheless if living costs do not show a sufficient increase by Apr. 1 to justify in themselves the larger wage, then it should be remembered thereafter that the miners anticipated that rise in costs and received their increased wages before the increase in living costs occurred. They would not be entitled to 10 per cent. more in two years if after the passage of the period of time a 10-per cent. increase in the cost of living should be discovered. They would be entitled to it were there any further increase, for otherwise they would be falling behind in the race for a livelihood.

There is something to be said in favor of figuring these increases in living and wages, not in two-year periods, but back to some earlier year, say 1899, so as to make the ad-

justment more scientific in the long run. This system is customary in Great Britain, though the miners are now opposed to it largely because a 10-per cent. further rise in the scale of 1879 would be a much smaller rise per cent. on the higher scale of 1916, and the miners for psychological reasons like large rises to appear small and the operators equally favor having small rises appear large. Finally, it should be added that, according to the *New York Times*, the cost of 25 selected foods which last summer was slumping steadily is now showing a rapid advance, and food prices are as high as for years.

Freedom from Competition

In these days of collective bargaining the last matter to be considered in determining whether there shall be an increase in the wage of the miners is whether there is a profit on the coal sold. Profits and wages have but little connection; for earnings are attainable or unattainable whether wages are high or low, so long as wages rise or fall uniformly all over an industry and so long as the demand for the product is not reduced by the wage rise and its consequent stimulation of price.

The glass blower, snapper and cutter made extremely liberal wages, and concurrently profits in the window-glass industry were neither better nor worse than in the coal business. Prices fluctuated up and down; usually, however, they, like coal prices, were below the cost of production except where natural gas was exceedingly plentiful and cheap.

But if it is not permissible to advance low profits as a reason for sitting complacently on the wage lid when wages might be advanced identically throughout the coal industry, yet it is excusable and quite reasonable to consider the action of competing fuels on the price of coal. This competition is supplied by water power, oil and gas. Of course the prices of these competitive factors are subject to slight increases resulting from any general rise in wages, especially over long periods of time. But oil and gas come in sudden and unexpected volume, and the price is dependent not so much on wages as on discovery of new pools.

Now rarely has the coal business felt less subject to the burden of cheap oil, and outside of western Pennsylvania the gas competition is also now at a low ebb. No other fuel will gain entrance if the price of coal is raised. It happens that crude oil has made a spectacular advance. Pennsylvania oil—which is not a competitor with coal, but which is a well-known barometer of the industry—rose from \$1.35 per bbl., its price last May, to \$2.35, its present price.

The Cushing pool which disturbed the southern fields is playing out, and the Bartlesville sand is being abandoned for another and shallower sand, the Layton, which was considered inferior to the lower sand when the Bartlesville was first struck. The old fields are all paying out, and rates on oil and gasoline have nearly doubled, not because crude oil is scarce, but because stocks will be short and in great demand in a little while if "wildcatting" is not encouraged by a healthy price.

So the operators of coal mines in the South and along the big rivers need not fear that increased competition of oil or gas will arise as the outcome of a rise in the price of coal. Nor need water power be generally feared. Some of the largest hydro-electric plants have collected

already all the factories they can supply, and some others are discredited by the unequal service which is all they can afford.

Rates will be fixed by the competition of mine operator with mine operator, and the coal producer need not look with apprehension on the competitive prices of any fuel or power producer. In fact inroads on the business of the oil companies are to be anticipated.

Action of Nonunion Operators

The increase of wages in its Maryland mines granted by the Consolidation Coal Co. shows that farseeing men like John D. Rockefeller, Jr., realize that it is the place of nonunion operators to be first in declaring themselves on a wage-scale increase. Rockefeller will probably pledge his corporation to do in Pennsylvania, Maryland, West Virginia and Kentucky, not exactly what the Colorado Fuel and Iron Co. does in Colorado, but something, in this case, far more just. He will agree in advance, *Coal Age* hopes, to give an identical rise in wage with that granted in the interstate conference or with that made operative in the states affected by former interstate agreements.

Let other operators in West Virginia, Kentucky and Alabama make a similar declaration. Then the interstate conference or the separate conferences of central Pennsylvania, western Pennsylvania, Ohio, "bituminous" Indiana, "block coal" Indiana and Illinois will be free to make their scales without any fear of consequences.

And the union will feel: "Why unionize West Virginia when we can, in any event, get the square deal from the ununionized part of the state? Let us save our ammunition till the time when we have real enemies."

Can West Virginia, can Kentucky, can Alabama see so far ahead? And why should not Rockefeller lead the way? He would be able to get the whole glory and would not be confronted as in Colorado with the sneers from the union and the suggestion, not wholly undeserved, "Yes, but we forced him to it."

And the operators in union states would feel more friendly with the ununionized states. Let it not be forgotten that this is diplomacy of the highest order; this is statesmanship. Those who have a low scale do well to avoid the appearance of offense, and such a readiness to relieve the anxieties of the operators in other states would always be accounted for righteousness.

The only difficulty rests in the railroad men. Many of the large coal company men are interested in railroads. If the miners ask and obtain an increase, the railroad employees will rightly demand higher wages. But with the employees there is the ever-present trouble that the Interstate Commerce Commission believes it is appointed to keep down railroad rates and stands manfully by its job despite the rises in wages. The action of the commission deserves the most severe reprobation.

The purpose of the commission is rather to regulate differentials than to keep down freightage charges. Its primary duty to prevent discrimination it is chary of performing, but in the most liberal way it prevents all rises in wages being reflected in tariffs. Some day this foolishness will appear so obvious that the whole commission will be ready to admit it. But meanwhile it makes financiers opposed to wage increases because one large body of their employees is engaged in an industry in which charges may not be varied with the fluctuations of cost.

Discussion by Readers

The Miner and "Safety First"

In his letter on this subject, *Coal Age*, Jan. 15, p. 110, George N. Lantz assumes that the assertion that "the miner is not in sympathy with the safety idea" is only partially true. My experience confirms this statement of Mr. Lantz.

But while it is true that many miners are not in sympathy with the safety movement, they can generally be divided into two classes. The first class includes the old so-called "practical miner," who, when a dangerous condition or practice is brought to his attention, will reply, "Oh, I have been doing that for forty years and haven't been hurt yet." This is a hard class to deal with, and it is hard to make such miners believe that the next time they do the same thing they may get caught. The other class is made up of young, thoughtless and reckless men. Constant hammering and talking of the right sort will often convince this class of the wisdom of the "safety-first" propaganda.

It is true that when the safety-first movement is first started in any operation many of the men are not in sympathy with it and look on it with suspicion, as they do on all innovations. But if handled diplomatically and the reasons therefor explained to the men, most of them will soon be willing to lend their cooperation to the movement. In fact, many will be found glad and anxious to do so.

One strong example of the appreciation of safety on the part of a miner was brought to my attention a few years ago. He was working in a mine where the safety-first movement had been started and was being vigorously pushed and where every possible precaution, including coal-dust prevention, was being introduced to eliminate danger. He left that mine and went to a neighboring mine working the same seam of coal, and where the mining rate had recently been advanced 5c. per ton, presumably to attract men. This man, however, was back in a couple of weeks where he came from, and when the superintendent asked him why he came back, his reply was to the effect that he would rather work for less money and feel safer. He stated that at the other mine where he had gone they paid no attention to safety precautions, did nothing to prevent coal dust, of which there was plenty, and he was afraid that the mine would blow up, so he thought he would come back where he felt safe even if he could not earn quite so much money.

EDWARD H. COXE.

Knoxville, Tenn.

Doorless Coal-Mine Cars and Rotary Dumps

F. C. Cornet's article, *Coal Age*, Jan. 15, p. 111, regarding rotary dumps and doorless mine cars should be considered carefully by every mine operator. In these days the cry inside the mine is, "Safety first"; outside the mine, "Don't break the coal"; in the office, "Cut

down the costs." The rotary dump, either of the power-driven or gravity type, can be made a big factor in all three instances; and in the districts where this type of tippie has been installed it soon becomes the standard type for the district—just as in Utah, where practically every new mine is using the rotary or gravity type of rotating dump. I would summarize the advantages of this dump as follows:

1. Safety-first, solid-end cars. No dust in roadways.
2. Minimum breakage in dumping, giving increased price for product.
3. Actual saving in money. Solid-end cars are stronger, cost less and require less repairs. Less cleaning of roadways.
4. Greater capacity, loading easily six to eight cars per minute.
5. Reliability. Cars on dump cannot hang up, and entire load is dumped clean.

Each point mentioned here admits of no argument. How in the face of all these indisputable advantages operators can continue to be blind to this simple method of decreasing expenses, increasing profits and adding to safety of operation is beyond understanding

Denver, Colo.

BENEDICT SHUBART.

Workmen's Compensation Law

Letter No. 1—The inquiries and comments published in *Coal Age*, Jan. 1, p. 25, and Jan. 8, p. 94, are samples of the deep concern felt by many mine foremen throughout Pennsylvania in regard to the recent amendment to art. 4, sec. 1, of the bituminous mine law (1911). I have listened to many similar comments in my recent tours of the mines.

The particular paragraph of the amendment that in the words of one very practical mine foreman "put the cleaver on the foremen" and which has already been quoted in *Coal Age*, p. 25, reads as follows:

If the mine is nongaseous, the mine foreman must possess either a first-grade mine foreman's certificate or a second-grade mine foreman's certificate, or be a person who in the judgment of the operator is equally competent with the holders of such certificates.

One construction only can be placed on this amendment to the law. Unlike certain other points of the Pennsylvania mine law there is nothing ambiguous here. The point seems plain enough that the mine owner can, if he so desires, employ a mine foreman who holds no certificate. There is nothing equivocal about this law. The operator is to be the judge as to the fitness of the man who shall run his mine. But, after all, has not this always been the case? No man likes incompetent labor, and in the matter of certificates the state has simply winnowed the chaff from the grain and saved the mine owners that trouble.

Viewed on the surface, this new provision of the state law has created in the minds of these much-abused, undervalued mine foremen a blue outlook indeed. And speaking frankly as a Pennsylvania mine foreman of the first and second class, myself, the outlook at first didn't look good to me at all. Yet a more careful analysis, based not alone on my own reasoning, but derived more

from daily contact with many men employed at many mines, has caused me to view the matter in a more favorable light as regards the tenure of the mine foreman's position. The fact of the matter is that this state will still continue its examination of men for this position and will certify to the fitness of those who pass the examination as being the men best-qualified for mine foremanship.

When seeking a thoroughbred, one gives due attention to the registry record and pays a higher price for a registered animal than for one that is not registered. Likewise, mine operators will prefer to employ certified foremen in preference to men who hold no certificates of qualification. About the only mine operator who will profit by the amendment is the man who runs a small mine to supply local trade and who, in the winter rush, desires to employ a few more than the "ten men" specified in the mine law. To increase the number of men in his employ, he will take advantage of the amended law and appoint himself mine foreman, being in his own estimation the best man qualified for that position.

BENEFITS OF NEW LAW WILL EXCEED BURDENS

I feel that the benefits that will accrue to mine foremen and to miners as well, through the working of the new law, will far exceed the burdens imposed, which are largely imaginary. Heretofore, the mine foreman bore the greater share of responsibility and blame for accidents in the mine and the miner shared the greater loss. The new law makes a radical change in the status of both the foreman and the miner in this regard. The burden of the prevention of accidents is now thrown on the mine operator. While formerly he regretted the occurrence of a disaster largely because of the loss of good workmen, he is now more actively interested in providing and maintaining safe mining conditions that will reduce his liability rate. While formerly the responsibility for accidents, in the eyes of the public and the law, rested on the unfortunate mine foreman, now both the responsibility and the costs or liability are shifted to the shoulders of the operator. In the future, mine accidents will cost the miner less and the operator more whenever they occur.

As a proof of this conclusion I may state without apology that since the Workmen's Compensation Act went into effect in Pennsylvania approximately a thousand operators, large and small, have taken out compensation insurance with what is known as the Associated Companies. From my previous experience as safety inspector for these same companies, it is interesting to note the strenuous efforts that are now being made by coal operators to get their mines into the best possible shape and condition, which will enable them to secure the lowest rate of insurance. In many instances I have found safety measures put into effect in these mines that the state inspectors had been unable to secure either by coaxing or threatening.

During the past few weeks, it has been my duty to spend several days at some of the mines in the Pittsburgh district, recommending certain measures that would put the mines into condition to comply with the standard of efficiency of safety set by the companies. It is certainly pleasing to see the alacrity with which companies now comply with my recommendations, men being started on the work in some instances within 10 minutes after the

suggestions are made. I may say, however, that this was in anticipation of the rating inspection looked for any minute.

Many of these recommendations made a year ago, under inspections that related to ordinary liability, had been totally ignored. Locomotive headlights are now promptly put in place; naked wires on which both miners and employers took chances are now being covered; cutter bars on chain machines are being perfected in a manner that formerly was deemed impracticable; and "bug dust" has assumed a wonderful importance in many gaseous mines. You ask the reason? I answer, There's a heavy charge for laxity in these details. While it formerly spelled "economy" as well as death and injury to allow pump gears to remain uncovered and shaft gates unhinged or not in place, it now spells "economy" to protect all gear wheels, inclose shafts, keep trip lights on the rear cars, post safety signs and keep on hand first-aid supplies and train first-aid rescue crews. While these things cost money, coal operators realize that it costs more money to do without them.

Most certified mine foremen will bear me out in the statement that, with a few noble exceptions, it has been the policy of the average coal company to let the state inspector get his satisfaction from the hide of the unfortunate mine foreman, and my observations convince me that the passage of that act, No. 330, is going to result in vastly more good than harm to mine foremen.

Realizing that there are some who will doubt the genuineness of my conclusions, I will cite briefly one or two specific cases that have come to my notice recently, omitting names and places for obvious reasons.

EVIL EFFECTS OF THE OLD LAW

Only last December a certain mine foreman was haled to court by the state mine inspector for failing to remove dangerous accumulations of coal dust. The evidence showed that, owing to a low condition of finances and the policy of the company to incur no expense that could be avoided, the mine foreman, who was not in a position to vacate his job, took the chance for which he was arrested and punished.

Now observe the change since the passage of the new law: The same company has put on a night force to load out the coal dust as it is generated. You ask, Is this done to avoid the law of the state? I answer, Hardly. The foreman was paid to dodge the law, for which he suffered the consequences. The compelling reason now is to avoid the heavy penalties imposed by the casualty companies that carry the insurance. Could anything show more clearly the veering of the wind? We must not blame the mine inspector, who was required by law to arrest the foreman as being the responsible party, while admitting that the blame rested on the company.

Another instance that recently came to my notice was that of a mine foreman of large family who was arrested by a mine inspector whom I know to be a thoroughly conscientious man and who only took this action because compelled to do so by law. This inspector admitted, as did the other I have mentioned, that it was the general manager, instead of the foreman, who was responsible for the fact that the mine had no second opening that was available. Reflecting on these conditions, it must appear that the mine foreman has little to fear in the operation of the new law.

In regard to a certificated foreman being liable to be replaced by a man who has no certificate, I may say that I have not yet met a single operator who entertained that idea as worthy of any consideration. It is true that things are moving so rapidly at the present time that one cannot speak with certainty. What is true today may not be true tomorrow; and no one can blame the mine foreman who has striven hard to attain his present degree of efficiency in the science of coal mining in order to comply with the previous demands of the state mining law, for fearing that the amended law has to a degree jeopardized his position, particularly if he is advanced in years.

The mine foreman like the small coal operator who gave little attention to the matter when the bill was being prepared and now has to meet the price for insurance against liability for accidents, is prone to regard the new law as drastic. In time the mine operator will no doubt pass this extra burden on to the consumer, who will have to pay a higher price for his coal. But the dismissed foreman who has nothing but his certificate to intercede for him and the miner whose age and health do not recommend him for the rugged work required in the mine may prove to be the real sufferers.

DISCUSSION NEEDED TO SHOW ACTUAL WORKING OF THE AMENDED LAW

Viewed in this aspect, the new law is a raw deal, and that fact is my only excuse for entering so largely into the discussion of the possible wrongs and injustice it may impose. Discussion is the only remedy available, and the mining press is its proper medium. To all practical mining men I say, Let *Coal Age* have your opinion on this matter. Do not waste words in your arguments, but instance in your letters the pernicious results that have come under your personal observation and which are the direct result of this amendment. I admit that the optimism of my remarks may be inspired by contact with a comparatively small number of the men most seriously affected by this law, and a true result can be obtained only by a thorough canvass of the state, which I am sure is open to all through the hearty coöperation of *Coal Age*, whose desire has always been to secure justice, not alone for the foreman, but for the mine owner and all mine workers.

While it must be admitted that there is nothing in the amended law that relieves the mine foreman of his legal responsibility for the safe condition of the mine, yet it cannot be denied that the provisions of the compensation act automatically do this, despite the reading of the law. The mine foreman is going to have a partner in the operator, who will share his worry over the safety of the mine because of the financial benefit he will derive thereby. There is going to be a general rewriting of "The Will of Allah"; and instead of the complacent remark, "Accidents will happen, you know," operators will proclaim, "Accidents will not happen if we can prevent them"; and largely they can.

Incidentally there is going to be a more favorable opportunity for the efficient foreman to display his ability as a real mine manager, to a greater extent than has been possible in the past, because in his efforts he will have the coöperation of the man higher up in authority, who must eventually foot the bill.

Houston, Penn.

SIM C. REYNOLDS.

Motor Haulage and Side Tracks

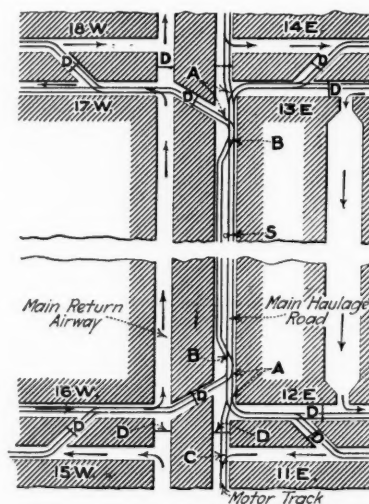
Letter No. 2—Referring to the arrangement of side tracks presented by Ostel Bullock, *Coal Age*, Jan. 1, p. 23, which I read with considerable interest, permit me to ask Mr. Bullock how he proposes to conduct the ventilation in the arrangement he has outlined, without using an excessive number of doors. I have no doubt he has fully considered this matter and his reply will be of interest.

Dawson, N. Mex.

READER.

This inquiry sent to Mr. Bullock elicited the following:

Replying to this suggestion of "Reader," I would say that he is correct in regard to the number of doors required being excessive. The ventilation should have been



SHOWING PLAN OF VENTILATION

shown on my first sketch. The plan we have used is shown in the accompanying figure. Inasmuch as there are only 80 men working in this mine, it would not pay to build overcasts, although they would do away with the doors shown on the main entry and aircourse. If there were more men working on the side entries, overcasts should be built at the mouth of each pair of entries so as to avoid the doors I have shown. I am not in favor of doors on the main entries, but it is the best we can do under the conditions in our mine.

It may be that "Reader" has assumed that our haulage is performed on the intake, but this is not the case. As shown in the figure, the mine is ventilated by a single current. There is little gas, if any, and the main-return entry is made the haulage road. There is a new cutoff switch laid on each pair of cross-entries when ten rooms have been driven and finished, and all the coal is then brought out on a single entry from that point.

Eldorado, Ill.

OSTEL BULLOCK.

Efficient Mine Foreman

Letter No. 24—I notice that a Pennsylvania foreman, in *Letter No. 15*, *Coal Age*, Jan 1, p. 24, says, "The bread-and-butter question has generally a lot to do with the mine-foreman's actions." Again, he states, "The mine foreman who hides 'gas' found in the mine or other dangers from the inspector is the one who stands the best chance of holding his place and drawing the highest pay." Had the writer of that letter witnessed the scenes at the Palos mine explosion, as I did—had he seen the widows and orphans as they wept over their lost ones, he would never have written the statement quoted above.

I want to say that the mine foreman who will do his own work and not depend on the other fellow to do it will see the time when his services will be wanted. Where

such a foreman is in charge, it takes a man who is on his job to secure a good place in the mine. He is not the man who will hide "gas" or keep other dangers that exist in the mine from the knowledge of the mine inspector, but will do his best to remove those dangers or close the entrance to the mine and not permit men to work there until it is safe.

Should the writer of Letter No. 15 ever come to Alabama, I would be glad to take him into a mine that is in charge of Foreman Coates and show him how one foreman runs his mine. Work is done when it is necessary, and I need not add that the services of Foreman Coates are always in demand. A superintendent told me that he would be willing to pay him a larger salary than any other man because the work was kept up and he could rest easy, knowing that the mine was safe in every respect, as far as this was humanly possible.

As we all know, there are foremen who have little knowledge in regard to running the mine in their charge, but I will eat my bread with no butter rather than be the cause of making widows and orphans by hiding gas or other dangers that I know exist in the mine.

Warrior, Ala.

L. J. WRIGHT.

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Waste of Material in Mines

Letter No. 2—I am glad to see that the question of waste of material in mines is to be discussed, as I have felt for a long time that the proper handling and care of material used are essential to the successful operation of coal mines.

It is wonderful what economy will result from having a fixed system in regard to the giving out and use of mine supplies. In the first place, there should be a supply room, where all needed material is stored. This material should be classified and arranged in its proper place in the room.

The supply room should be in charge of a duly authorized person, acting under the supervision of the mine superintendent, and he should be held responsible for all supplies kept on hand. He should make a daily report to the superintendent of the material used in the mine. He should keep a ledger account that will show at a glance the material received, that given out for use and the balance remaining on hand.

SYSTEM IN HANDLING ALL MINE SUPPLIES

No argument is necessary to prove that the adoption of such a system for the handling of mine supplies would result in a far less loss and waste of material of which too frequently no account is made. By a proper arrangement of the material in the storeroom, the storekeeper would be able to furnish promptly any material needed and avoid delay.

No material should be given out by the storekeeper except on the presentation of an order duly signed by the mine foreman. The foreman is thus made responsible for all material used in the operation of the mine. He should be supplied with printed blank forms, showing every class of material kept on hand, with columns in which can be noted the quantity of material needed and where it is to be used. The form should show the name of the mine and the date when the material was ordered and should be signed by the mine foreman or, in his absence, by a duly authorized assistant foreman.

As far as practicable the foreman should make out the order for what material will be needed the following day, and this should be placed in the hands of the storekeeper at noon, so as to give him time to get the material out in readiness for distribution by the night men. The material should be marked to show where it is to be taken, as indicated on the order given by the foreman.

A good plan is to have an order book so arranged as to give a carbon copy of each order issued by the foreman. The copy is retained by the storekeeper for his own convenience and check, while the original order is sent to the mine superintendent, after being signed by the storekeeper to indicate that the material has been given out by him. These orders, as they are received in the superintendent's office, are charged up and the material given out is entered on the proper account.

The storekeeper should render a monthly account, showing all material used and the balance of each kind on hand, which report should be checked by comparison with the account in the superintendent's office. Also, a comparison of the amount of work done, as shown by the mine foreman's monthly report, with the material reported by the storekeeper as used, will show any undue waste or loss of material, which is of such common occurrence in coal mining. Under the system I have suggested and which is in use in many mines today, it is easy to trace up material used and charge the same to the proper account, which will enable an accurate cost sheet to be kept of all work done in the mine. There should be a code of rules governing the giving out of all material, and under no condition should the storekeeper furnish material to anyone except on a duly signed order of the mine foreman or his authorized assistant.

ACCOUNTING SYSTEM AN INCENTIVE TO ECONOMY

There is another phase of this subject, however, which I desire to mention, and that is the incentive such an accounting of material will be to the mine foreman and his assistants to economize in their use of all mine supplies. It will also encourage all trackmen, timbermen, motormen, pumpmen and others to be more saving of the material furnished them, and there will be less of this material thrown to one side and lost.

We all know that it is too common to go into mines and see material thrown to one side of the road or into abandoned rooms and crosscuts or into the gob where it is soon partially covered by the waste and refuse of the mine. Under the old system, men could be hired with advantage to go around the mine collecting such material and taking it to some central point where it can be used again as required. The men employed for this purpose can generally earn their own wages in the material thus saved.

When a room or a section of a mine is finished, all timber, rails and other material fit to be used again should be taken out at once and not left there until such time as it may be required, as it will then be generally lost sight of and forgotten. By such means large quantities of props, cap-pieces, ties, fishplates, rails, wire bonds, etc., can be saved for use a second time. Speaking of bonds, these should be punched out from the rails instead of cutting them in two. When the bonds are cut they are fit only for the junk pile, but if punched out they can be used again.

Universal, Ind.

WILLIAM JARDINE.

Inquiries of General Interest

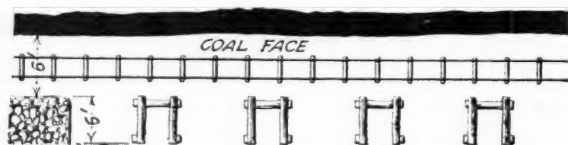
A Longwall Proposition

I would like to submit to the readers of *Coal Age* a question in longwall working that has been a matter of some concern to us. It is as follows:

We are working a thin seam of coal that varies from 20 to 27 in. in thickness. The coal is hard and is in fact the best grade of coal in the State of Texas. The overburden varies from 100 to 110 ft. in thickness and consists of clay, shale, sandstone and slate. The sandstone is 30 ft. thick, and is separated from the seam we are working by 2 ft. of soft sandy shale, overlaid with 2 ft. of impure coal, hard and without cleavage, and 6 ft. of a block slate on which the sandstone rests.

By the present system of working, roadways are driven 30 ft. apart and it is necessary to brush the roof slate and impure coal up to the block slate to obtain the necessary headroom on the roads. In order to avoid this brushing on the roads, it is proposed to employ an endless-rope haulage that will handle all the coal along the face instead of through the roads. By this arrangement we would be obliged to maintain only four main-haulage roads leading to the face.

As shown in the accompanying figure, the plan involves the building of cribs or cogs from 10 to 15 ft. apart



along the face. It is thought that it will thus be possible to keep open a face road 6 ft. wide between the cribs and the coal, supporting the roof by timbers until the former has advanced 6 ft. farther, when it would be necessary to move the road forward and build new cribs, after which the old cribs would be withdrawn. If this plan could be successfully carried out, it would prove a great saving in the expense of brushing and would have the further advantage that the roof would not be weakened, as it is under the present system. We do not intend to mine the seam of impure coal, as it is not marketable.

I would very much appreciate any suggestions in regard to this plan or any other plan with which the readers of *Coal Age* may be familiar.

JOSEPH JELINEK.

Loving, Tex.

The correspondent has not explained how it is proposed to install an endless-rope haulage at the longwall face. It may be assumed that there are to be four branches of this rope haulage, each operated separately; but even then it would be a difficult matter to shift the tail sheaves and pulleys along the road as the face is advanced. The correspondent has not shown a complete plan, but if there is a straight face in each section, the difficulty of transporting the coal along the face, either by rope

haulage or conveyor belt, would not be as great. We would be glad to have the readers of *Coal Age* discuss this plan or suggest other plans for adoption.

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Percentage of Sulphur in Coal

I am interested in knowing what may be the highest percentage of sulphur in bituminous coal that can still be considered as merchantable and fit to compete with other coals of the same kind in the market. I am fully aware that the less sulphur present in coal, either as iron pyrites or in any other form, the better the quality of the coal. But owing to the fact that the percentage of sulphur present in different coals mined is quite variable, it would seem that there should be a certain limiting percentage of this impurity that would mark the coal as "unmerchantable."

JAMES F. BEATTIE.

New Bethlehem, Penn.

The question asked by this correspondent cannot be answered directly, since there is no prescribed limit to the percentage of sulphur that, when present in the coal, would render the latter "unmerchantable." As suggested by the correspondent, the market value of the coal is generally greater as the percentage of sulphur present is less. However, since coals containing a percentage of sulphur that would make them unavailable for certain industrial purposes, such as the manufacture of coke or illuminating gas, can still be used as fuel in the production of power or for heating, it follows that the limiting percentage of sulphur present will depend on the purpose for which the coal is to be used.

Also, while the purity of coal increases its market value in a general way, the question as to the coal being merchantable or salable will greatly depend on the supply and demand in the market, since at times when the supply is not equal to the demand, coals of inferior quality will often be used. At another time, when the supply exceeds the demand, such inferior coal might hardly prove to be salable at a profit.

As just stated, in the manufacture of coke or illuminating gas and a few other industrial purposes, coals of superior quality or purity are in demand. The presence of sulphur is detrimental, and specifications for the purchase of coal in such cases mention the limiting percentage of sulphur that will be accepted. For fuel purposes, either domestic or commercial, the presence of much sulphur in coal is objectionable, because the sulphur destroys the grate bars by combining with the iron, and the clinkers formed in the fire obstruct the draft and are difficult to remove. It must be remembered, however, that when sulphur is present as iron pyrites, it has a heating value that is stated as being almost one-half that of the coal it displaces. The sulphur in coal generally occurs in this form (iron pyrites) either in large lumps or bands, or finely disseminated particles. Sulphur also occurs in coal in combination with the alkaline earths, lime and magnesia, or it may occur as organic sulphur.

Examination Questions

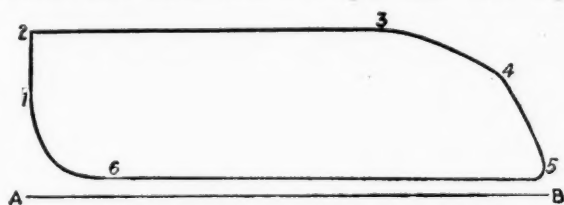
Iowa Engineers' Examination, Des Moines, Nov. 9-10, 1915

(Selected Questions)

Ques.—(a) What is the purpose of an indicator diagram? (b) Draw a diagram such as would likely be made by an engine running properly and mark the points in the cycle.

Ans.—(a) The purpose of an indicator diagram is to furnish the means of calculating the mean effective steam pressure in the cylinder, from which is calculated the horsepower of the engine by multiplying this mean effective pressure by the area of the cylinder in square inches and the piston speed in feet per minute and dividing by 33,000.

(b) The accompanying figure shows a common form of indicator card taken from a simple slide valve engine.



COMMON FORM OF INDICATOR CARD

The points in the cycle are as follows: 1, point of admission of steam; 2, beginning of stroke; 3, point of cutoff; 4, point of release; 5, end of stroke; 6, point of compression. The line 1-2 is the line of "admission." The line 2-3 is the steam line. The line 3-4 is the expansion curve. The line 4-5-6 is the period of release. The line 5-6 is the back pressure line. The line 6-1 is the compression curve. The line AB is the atmospheric line, which serves as the datum line from which the steam pressure in the cylinder at different points of the stroke is measured on the card.

Ques.—How do you find the horsepower developed by a steam engine?

Ans.—The horsepower developed by a steam engine must be calculated from an indicator card, which furnishes the means of determining the mean effective cylinder pressure throughout one entire stroke of the engine. Separate diagrams on the card show the pressures for the forward and backward strokes, which may not give the same results. Having obtained the mean effective pressure (m.e.p.) which is expressed in pounds per square inch, multiply this by the sectional area of the cylinder in square inches and that product by the length of the stroke in feet times the number of strokes per minute; or, which is the same thing, by the piston speed in feet per minute. The indicated horsepower of the engine thus obtained is expressed by the formula

$$I.h.p. = \frac{p l a n}{33,000}$$

The symbols, p , l , a , n indicate respectively the mean effective pressure in pounds per square inch, length of stroke in feet, sectional area of cylinder in square inches

and number of strokes per minute. The constant, 33,000, is the number of foot-pounds per horsepower.

Ques.—How many square feet of heating surface are allowed per horsepower in flue boilers?

Ans.—Under ordinary conditions of firing and natural draft, at sea level, an allowance of 10 sq.ft. of heating surface per horsepower is sufficient for a horizontal flue boiler burning a fair quality of coal.

Ques.—A boiler evaporates 4,000 gal. of water per hour from and at 212 deg. F.; what is the horsepower of the boiler?

Ans.—The adopted unit of commercial horsepower is the evaporation of 34.5 lb. of water per hour, from and at 212 deg. F. According to this standard, the rated horsepower of this boiler is $4,000 \div 34.5 = 116$ hp., nearly.

Ques.—A tank is 18 ft. in diameter and 18 ft. deep. Assuming the operation of a 4x6-in. duplex, double-acting pump is perfect, how long will it take such a pump to fill the tank when running at a speed of 50 strokes a minute?

Ans.—The cubic contents of the tank is

$$18 (0.7854 \times 18^2) = 4,580 + \text{cu.ft.}$$

Assuming no slip or leakage in the pump, the quantity of water discharged is equal to the piston displacement, or $50 \times 4 (0.7854 \times 6^2) \div 1,728 = 3.2725$ cu.ft. per min. The time required to fill the tank on this basis is therefore $4,580 \div 3.2725 = 1,400$ min., or 23 hr., 20 min., nearly.

Ques.—(a) Where would you look for wear in a hoisting rope? (b) How might this wear be lessened should it be unusually rapid?

Ans.—(a) Probably the greatest external wear of a hoisting rope will be manifested at that point where the rope rests on the headsheave when the cage is at the bottom of the shaft, this portion of the rope being subject to more abrasion on its exterior surface than other parts. However, greater cause of weakness in a hoisting rope is to be found close to the coupling by which it is attached to the cage, or within a few feet of this coupling. This portion of the rope is subjected to more bending and to greater stress due to sudden jerks when a heavy load is started from the shaft bottom too quickly, and internal wear and broken strands are apt to develop at this point. Also, in the use of too small a headsheave, the same internal wear and broken strands are apt to develop in that portion of the rope resting on the headsheave when the cage is at the bottom. Internal weakness from corrosion is apt to develop rapidly where a hoisting rope is wet with the acid mine water found in many shafts.

(b) Wear in a hoisting rope may be chiefly prevented by treating the rope regularly as required with a suitable dope or tarry application that will not only lessen the abrasion, but protect the rope from corrosion by acid mine waters. Also, care should be used to avoid undue jerks and strains when starting the cage off the bottom, and the headsheave should be of sufficient size to avoid undue bending stresses in the rope.

Coal and Coke News

Washington, D. C.

The Federal Reserve Board in the monthly summary of business conditions just issued makes several interesting references to the coal and fuel situation in the several Federal Reserve districts. The principal points in this connection are as follows:

In the third district—Philadelphia—under the head of unfavorable features of the business outlook are classed these elements, "Railroad freight tie-up at eastern terminals, with embargoes on certain classes of freight at certain cities; insufficient railroad equipment to handle freight; lack of ships for foreign trade; high price of building materials which may curtail operations; threatened anthracite coal strike and Wilkes-Barre traction strike; rising costs of manufacture, including labor and raw materials, especially dyestuffs; a certain lack of confidence in the continuance of the stability of business conditions."

Of District No. 4—Cleveland—the Board says:

"The head of one of the largest coal companies in this district reports that the present condition of the coal business is superior to any similar period for 8 or 10 years."

"Improvement in the railroad situation over the holiday season in respect to the car congestion has permitted freer operations among several important industries and has added to coal mining and coke production."

From District No. 6—Atlanta—it is reported:

"In the Birmingham district iron and steel industries continue to do a big business. More iron is being sold than is being produced, and the production is the heaviest in the history of the industry. Prices continue to range from \$15.50 to \$16.50 per ton. All the iron that was sold several months ago at the minimum price has been delivered, so that all iron now being shipped is at a good profit. In view of the shortage of coke a number of old ovens have been put in operation. New ore mines are being opened. In the steel plants all are running at a maximum output, and labor is assured of steady employment in the district."

Reports from District No. 7—Chicago—say that:

"Coal mining in Illinois is active, due to the requirements of the steel and allied industries. The agreement of the United Mine Workers with the coal operators expires Apr. 1 next, and a considerable quantity of coal is being purchased for storage by the railroad companies. The freight movement in this district is heavy considering the car shortage."

The report from the 10th District—Kansas City—says:

"The mid-continent oil field continues exceptionally active. New leases are being taken and an unusual amount of drilling and prospecting is under way. The demand for timbers and structural steel is strong, occasioned by the high prices being paid for the crude product. The prevailing price in this field is a trifle in excess of \$1.20 per barrel."

The Eleventh District—Dallas—reports:

"Operations in the oil fields of the district continue active, and the prices obtaining are the best in the history of the field. Production in the northwestern Louisiana districts, composed of Caddo, Red River, and De Soto Parishes, amounted in the aggregate to 14,881,022 barrels, compared with 12,210,598 barrels in 1914. Present prices for the product are stimulating operations."

The situation in the Twelfth District—California and adjacent states—is particularly interesting as to petroleum, it being reported that:

"The petroleum industry of California is benefiting by advancing prices, occasioned both by broadening markets and expanding consumption, and by a decline in production of 13,000,000 barrels last year, as compared with 1914. Metal mining—gold, silver, copper, lead—is very active."

HARRISBURG, PENN.

Francis H. Bohlen, legal adviser of the Workmen's Compensation Board and State Workmen's Insurance Fund, has answered recent criticisms of the compensation laws as they effect insurance in this state. He dealt particularly with statements from casualty insurance managers and brokers, and gave a detailed statement of insurance practices as laid down by the authorities in the matter of compensation policies.

"These statements are not accurate," said Mr. Bohlen. "The state fund is managed by state officers and the act creat-

ing it provides that the state shall pay all expenses of organization and management until June, 1919. The appropriation of \$300,000 is for the purpose of paying expenses until June, 1917, as the existing legislature could not make appropriations extending beyond that time. Further expenses will be met by appropriations to be made by the next legislature.

"There is the statement that should a catastrophe take place the institution would become insolvent. As a matter of fact, the risk of depletion by catastrophe has been cared for by the state fund reinsuring its catastrophe hazard. Further, the state, by binding itself to pay all expenses until 1919, practically contributes a surplus. Insurance rates are made up of 57½ per cent. pure premium, the amount necessary to pay losses and 42½ per cent. for expenses, which the state bears in the case of the fund. Thus the state fund is relieved of all expense charges and its premium rate 90 per cent. of that charged by stock companies or mutual associations, therefore includes over 50 per cent. more than the amount computed as necessary for claims, and thus constitutes a margin or surplus for safety.

"In the third place, statements of misfortune in other states are made and West Virginia is cited. This is inaccurate to say the least, as in New York and California, which have state funds operated on lines identical with those adopted in Pennsylvania, the experiment has proved a thorough success. The New York fund is the second or third largest insurer in that state. It charged originally lower rates, has declared substantial dividends and has not only earned a surplus, but established a catastrophe reserve as well, California has been equally successful.

West Virginia Followed a Different Plan

"The West Virginia fund was based on a different plan than that followed in Pennsylvania. Premiums were limited to \$1 per \$100 of payroll. The principal industry is coal mining. The Pennsylvania coal-mining rates are more than \$3. It was obvious to all who understand insurance that the West Virginia fund, at a rate less than one-third of that now in force here, could not be operated successfully and there was no surprise over its insolvency. The experience has no bearing upon the future of the Pennsylvania fund, which is not established on an arbitrary minimum, but whose premiums are based upon the experience of the best actuaries, including those in the service of the states of New York, Massachusetts and Wisconsin.

"It was also stated that the state fund policies gave a less complete coverage than those of the casualty companies. The state insurance commissioner has ruled that all policies insuring compensation liability shall cover only the employer's liability under the laws of Pennsylvania to those of his employees who have accepted the compensation article of the compensation act. If any insurance carrier wishes to insure any other liability, such as liability under admiralty law or for accidents occurring outside of Pennsylvania, this can only be done in a separate policy or indorsement and at an additional premium.

"As section 303 of the compensation act expressly provides that acceptance of the compensation article of the act is a surrender by the employee and his wife or dependents of any right to any damages or compensation except the compensation given in the article, it is clear that the state funds policy covers all the liability of an employer, subject to the compensation act, which a casualty company can legally cover in a compensation policy and at the premium rates approved by the insurance department for compensation insurance.

"In a statement, as coming from a casualty company, it was stated that casualty companies are being compelled to ask higher rates than they wanted to ask, and allusion was made to the plan adopted by the state. The only state authority which could adopt this plan is the insurance department, which has no connection with the state fund. The facts are these: The insurance department, believing it essential to secure uniformity in compensation-insurance practices, assisted several insurance carriers to form a rating and inspection bureau.

"Its governing committee includes three stock companies, two mutual associations, the state fund and a representative of the insurance commissioner as chairman. This bureau took

up the question of merit rating with the view that the rating adopted should give full effect to the accident-preventive functions of the compensation law.

"To this end they emphasized safety, discipline, organization, sanitation, hospital and first-aid equipment. For these credits are to be given in the plan adopted by the bureau. Penalties are imposed for violation of safety regulations required by the Department of Labor and Industry as established by factory acts or by the Industrial Board operating under these acts.

"This merit or rating system, though adopted, is subject to revision within 90 days, and it is not yet certain what will be its final form. Test inspections are being made, and when data is obtained rates will, if necessary, be so adjusted as to make the premiums correspond to the hazards of all industries, without discrimination against any class. It is impossible for the state fund to obtain any advantage from this system. It must operate under the same requirements as all other insurance carriers. It cannot give credits different from those given by stock companies or mutual associations. It must impose penalties in all cases where competitors must impose them.

"In so far as the statement that this plan was or is urged by the Insurance Department of Pennsylvania at the instigation of the state fund or for the purpose of giving the fund any advantage in competition, it is to my knowledge untrue and unfair both to the fund and to the insurance commissioner.

"Schedules in other states take no account of safety organization, but give credit for physical condition which complies with the law. Some of these states make credits of 40 per cent. possible under conditions where places of employment fall far below the Pennsylvania standard.

"Experienced engineers conclude that physical safety equipment is far less efficient than proper safety organization and discipline. It is because of this that the state insurance department is favorably inclined toward the system which the Pennsylvania Rating and Inspection Bureau has adopted."

Forty Verdicts Taken

More than 40 state-tax-case verdicts which had been agreed upon between the Commonwealth and defendants were approved by the Dauphin County Court and a jury on Jan. 27. The settlements agreed upon in coal-tax suits were in accordance with the recent decision of the Supreme Court. These were all in favor of the defendant companies.

Investigation of the advance made in the price of anthracite coal after the imposition of the anthracite tax, which has for its object the return to consumers of money paid by them as tax, will be undertaken by the state commission recently named by Governor Brumbaugh within a few weeks. Sitings may be held in various cities.

Attorney General F. S. Brown, who is designated as counsel for the commission under the resolution creating it, has been working on plans for the coal probe and will consult with the members of the commission during the early part of February. It will then be determined what policy to adopt and the extent of the preliminary inquiry. It is understood that considerable data has been gathered by the state.

PENNSYLVANIA

Anthracite

Centralia—Five families of miners were made homeless by a \$10,000 fire on Jan. 25. Flames were discovered in the rear of the home of Louis Dubb at 8 o'clock in the morning. Although nearly all the men were working in the mines, enough responded to get out the fire apparatus, but when the hose was connected it was found that there was not enough water. The flames swept unhampered through three single and one double dwelling. A fire here recently did damage to the amount of \$60,000.

Exeter—The anthracite coal companies are experiencing a shortage of labor. The exodus due to the war, the epidemic of grip and the general scarcity of workmen, due to industrial prosperity are all contributing factors. On several occasions the Lehigh Valley Coal Co., as an example, has had to suspend operations at under-manned collieries.

Lansford—The famous mine fire, which has been burning for over 60 years, at Summit Hill, has burned through the wall which the Lehigh Coal and Navigation Co. placed in front of it several years ago at a cost of more than a million dollars, and is threatening the mammoth vein in the Panther Creek Valley. The wall is 100 ft. deep and 15 ft. thick, is of solid concrete, and experts believed the fire would never eat through it and that it would prevent the fire from spreading further, eventually extinguishing it. The officials of the Lehigh Coal and Navigation Co. are now putting forth every effort to prevent the fire from getting into the vast beds

of anthracite. A large force of men is at work drilling holes, into which openings water and slush is being poured directly onto the fire. Already the fire has destroyed coal valued at millions of dollars, and the damage which will result to the company in case it cannot be extinguished cannot be estimated.

Drifton—The Lehigh Valley Coal Co. has announced that it will be ready to run anthracite coal through its new breaker, in process of construction, on Mar. 1. It is believed that the utilization of this equipment will bring about the abandonment of several old breakers.

Shickshinny—Preparations are under way at the Salem Colliery of the Stackhouse Coal Co. to install a large steam shovel at the culm bank near the breaker to clean up the bank and run it through the breaker. A long conveyor line is being put up and will be put in operation in a short time. The demand for small sizes of coal is greater than the supply.

Dunmore—Three additional equity suits to restrain trial of local mine-accident cases in the Supreme Court of New York have been filed by the Pennsylvania Coal Co. against Tony Pastelli, Thomas Faro and Quin Lombardi. This makes a dozen such suits to prevent taking such cases outside of Pennsylvania. The hearings are fixed for Feb. 12.

Bituminous

Pittsburgh—The Monongahela River Consolidated Coal and Coke Co., recently notified the pilots, captains, stewards and chief engineers employed on towboats owned by the company that their services would not be needed after Feb. 1. The rivermen usually work under yearly contracts, but because of the large demand by mills in the Pittsburgh district the company has temporarily withdrawn the shipment of large tows of coal south.

Charleroi—J. B. Miller, foreman in charge of the Globe mine of the Vesta Coal Co. and Ray Davis, a miner, were killed on Jan. 26 and two other miners were seriously hurt when a fall of roof occurred. Hard work on the part of a hurriedly formed rescue corps saved the injured men from suffocation.

Canonsburg—The Hazel mine, formerly owned and operated by the Pittsburgh-Buffalo Co., has been purchased by Pittsburgh interests headed by A. M. Marion, and will shortly resume operations. This mine, upon which repairs are now being made, gives employment to about 800 men. It has been idle since last summer.

Johnstown—Samuel S. Hoffman, a farmer, has filed suit for \$60,000 damages against the Berwind-White Coal Mining Co., alleging that the undermining of his farm by this firm has ruined what was once one of the finest agricultural properties in Cambria County. The farm includes about 200 acres and has always produced well until lately, when springs and wells failed and the ground subsided, opening fissures in places.

Uniontown—Work is being resumed at the old Atlas works of the H. C. Frick Coke Co., and the entire 120 ovens at this plant will be in operation shortly. A number of additional ovens throughout the region are being blown in by the Frick company. It is said that the shortage of labor is not as pronounced in the Connellsville region now as it has been in the recent past.

Connellsville—The weekly production of coke in the Connellsville region recently amounted to 400,506 tons per week, while shipments amounted to \$82,144 tons. This was a decrease of 28,045 tons from the preceding week.

The number of coking plants which, in the existing state of the market are finding it more desirable to ship raw coal than to manufacture coke, is steadily increasing. In addition to those which have been so engaged for some time past, the Johnson mine of the Johnson Fuel Co., at Percy, is now ready to ship coal. The Atcheson plant of the Republic Iron and Steel Co., at Gans Station, is another of these plants which has long been idle as a coke producer. This mine is being overhauled, new tipples facilities provided, new fan equipment erected and other improvements made to adapt it to the loading of raw coal. The output will go to the by-product plant of this company at Youngstown.

Wampum—It has been officially announced that the plant of the Beaver Coal and Coke Co. will operate in full immediately. More men were taken on recently and others are being employed daily. The output is being increased and it will be but a short time until the mines are working at full capacity. One of the richest coal deposits in this part of the state is to be found in the mines of the Beaver company, there being one 3-ft. and one 6-ft. vein.

WEST VIRGINIA

Montgomery—The mines of the Mecca Colliery Co., which have not been in operation for some time, will start up within the next 30 days. The affairs of the company are in the hands of H. T. Smarr, receiver, at Charleston.

Welch—Luther Howard, a colored miner of Marytown, was recently arrested on the charge of violating the mining law, being charged with taking 10 lb. of powder into the mine at one time, whereas the law permits not more than 5 lb. He was given a hearing and fined \$25 and costs.

Charleston—Large coal-mining companies in the Kanawha field are figuring on an order of a million tons of coal for the Italian Government. If this contract is awarded here it will be the largest single order ever placed in the Kanawha field for foreign consumption, and one of the largest ever placed in the United States for like purpose.

Grafton—It is reported in this district that some of the miners have been shooting off the solid instead of undercutting the coal as the state law requires. Several of these miners are being closely watched by the inspectors and arrests are expected. Shooting from the solid is a dangerous practice and the state officials are making every effort to stop it entirely.

KENTUCKY

Jenkins—Three hundred miners arrived here recently to be employed in the mines of the Consolidation Coal Co. in order to meet the demands of the large orders being received by the company.

Harveyton—The Harvey Coal Co. is now supplied with power from the new station of the Kentucky River Power Co. and mining work has started with much rapidity. The first shipments of coal will be made shortly.

Fleming—The Elkhorn Coal Corporation is starting the construction of 50 additional miners' houses at Haymond on Potters Fork. Following this, big increases will be made in the mines and many additional miners will be employed. Rush work will characterize the building of the miners' houses.

Earlinton—Mine Rescue Car No. 3 of the Bureau of Mines is making the rounds of the western Kentucky mining towns.

Central City—As a result of a dispute over the scale for machine mining, 235 employees of the Williams Coal Co. at McHenry, Ohio County, Ky., have struck. Men operating the machines which were installed several weeks ago asked for a tonnage scale while the company insisted on a day scale. It is expected that the differences will be arbitrated.

INDIANA

Clinton—Miners and operators of the Clinton field will hold a first-aid and mine-rescue meet here in April.

Boonville—The strike which has been on at the Polk Patch mines, owned and operated by the Warrick Coal Mining Co., has been settled through arbitration.

The stripping method of mining coal which has extended throughout this state is meeting with obstacles throughout this region. This is largely due to the heavy overburden which overlies the coal. Climatic conditions, particularly heavy rains, also strongly interfere with this method of mining.

ILLINOIS

Mascoutah—The Rentchler mine, near here, owned by the Missouri & Illinois Coal Co., has resumed operations after having been closed for two years, on account of adverse market conditions. The company expects to operate the mine continuously for the next few months at least. Between 100 and 150 men will be employed.

Nokomis—The Nokomis mine of the Rutledge & Taylor Coal Co. has resumed after a suspension of a week on account of the wrecking of a cage and the tearing out of several timbers in the shaft.

Benton—The first coal was hoisted recently from the mine of the Middle Fork Mining Co. Ground was broken for the shaft in August, 1914, and coal was reached five months later. The capacity is 4,000 tons daily. By Apr. 1 the mine will be giving employment to several hundred men. The shaft is two miles east of Benton and connects with three railroads. The Edwards & Bradford Lumber Co., with several hundred yards scattered over the Northwest, is to take the entire output. This makes the 19th mine in Franklin County.

Sparta—The Willis Coal and Mining Co. is making preparations to reopen the "Gulf" mine at Sparta, which has been closed for about a year.

PERSONALS

Louis F. Lumaghi, president of the Lumaghi Coal Co., and the Williamson County Coal Co., has been elected a director of the Collinsville, Ill., State Bank.

A. W. Hildebrand, of New York, on Jan. 25 succeeded J. A. Grazier, of Johnstown, Penn., as head of the Grazier Coal Mining Co. Mr. Grazier was forced to resign on account of ill health.

Bernard Burns, formerly of Monongahela, Penn., was recently promoted from assistant mine foreman to mine foreman at the Cokeburg mine. Albert Roth, whom Mr. Burns succeeds, goes to Ellsworth No. 2 mine as foreman.

Frank Renshaw, a mining engineer of Huntington, W. Va., will shortly take charge of a coal operation of considerable magnitude recently acquired by his brother, C. C. Renshaw, of Philadelphia. This operation is located in western Pennsylvania.

Carl Scholtz has been appointed manager of the mining and fuel department of the Chicago, Rock Island & Pacific Railway Co., with headquarters in Chicago, Ill. He will have charge of all mining operations and the purchase handling and use of company fuel.

D. B. Sebastian has been appointed assistant manager of the mining and fuel department of the Chicago, Rock Island & Pacific Railway Co. He will be charged with the purchase handling and care of company fuel. H. S. Mikesell, who has also been appointed assistant manager of the same department, will have jurisdiction over mining operations.

Neil Robinson, of LaFollette, Tenn., has been very ill for the past week in the Lincoln Memorial Hospital, in Knoxville, Tenn., suffering from an attack of valvular heart trouble. He is now somewhat better and as soon as he is sufficiently strong, which it is thought will be within a few days, he will go to Florida to recuperate in the open air.

Julius S. Walsh, Jr., has been appointed industrial agent of the Wabash R.R. The office has just been created for the encouragement of mining and agricultural enterprises and the promotion of industries in the cities and towns along the company's lines. He will make his headquarters in St. Louis but will travel over the entire system.

James H. Pritchard, who has been secretary of the Hocking Valley Coal Operators' Association for a number of years, has been appointed chief deputy and safety commissioner of mines of Ohio by the Ohio Industrial Commission. He succeeds John M. Roan, whose resignation took effect Feb. 1. Mr. Pritchard is well known in Ohio mining circles and is supported by operators and miners alike. Mr. Roan leaves the office with the best wishes of operators and workers after holding the position for a little more than two years. His future plans have not been announced.

OBITUARY

James L. Samples, pioneer coal-mine owner, of McAlester, Okla., and later a conductor on the Missouri, Kansas & Texas R.R., died at his home in McAlester, on Jan. 19. The deceased is survived by his wife and one child. Burial was made at McAlester.

Frank McKeown, 45 yr. old, a mine inspector at the Devereaux mine, north of Springfield, Ill., died recently at St. John's Hospital from injuries he received the previous day in an explosion at the mine. After the explosion he crawled a mile on his hands and knees to the bottom of the shaft. He was badly burned about the back, hands and face. He was formerly a county inspector.

David F. Thomas, aged 52 yr., for more than 33 yr. in the employ of the Lehigh Valley Coal Co., died on Jan. 26 of hemorrhage. Mr. Thomas was born in Wales. For the last eight years he had been mine foreman at the Maltby colliery; prior to that time he held a similar position for seven years at the Exeter colliery and before that he was four years at Heidelberg No. 1. He is survived by his wife and seven children.

Francis S. Parker, president of Hanson & Parker, Ltd., died Jan. 28 at his home in Boston, of pneumonia. Mr. Parker was born in 1863 in Hong Kong, China, where his father was the representative of one of the old Boston merchant houses. He entered the wholesale coal business with the Gay & Parker Co., after attending Harvard College, and became president

of that company and afterward of its successor, Hanson & Parker, Ltd. He served as lieutenant and captain in the Spanish war and was retired from the Massachusetts Volunteer Militia with the rank of major. At his country home, Shawsheen River Farm, Bedford, Mass., he acquired a country-wide reputation as a breeder of trotting horses. Through 30 years of active business life Mr. Parker won a host of friends. He was always a kindly, courteous gentleman, considerate and thoughtful of others, and he was moreover a merchant of the strictest integrity.

Thomas P. Macfarlane, one of the most prominent and experienced mining men of the Wyoming Valley, Penn., died at his home on Jan. 25, at the advanced age of 80 yr., of general debility. At the time of his death he was actively identified with the municipal affairs of the borough and was a member of the school board. Mr. Macfarlane's father, James P. Macfarlane, superintended the opening of the first coal mine, the old Butler, in Pittston, in 1843, afterward becoming an operator, opening up many mines. His son, Thomas P. Macfarlane, followed the footsteps of his father and became a prominent mining man, experienced in every department. He was educated chiefly in Wyoming Seminary, where he graduated in 1857. In 1864 Mr. Macfarlane was general manager of the coal interests of the Delaware, Lackawanna and Western Railroad Co., opening up many mines for this concern, which today are among its largest producers. In 1873 he went to Colorado, where he was engaged in coal mining about a year, and returned to become general superintendent of the mines of the Kingston Coal Co. After leaving this company he leased the Chauncey mine, which he operated for ten years. Mr. Macfarlane was a director in the Wyoming Coal and Land Co. In 1860 he was married to Margaret McCullough, of Nova Scotia, who died in 1889. Seven children were born, but the only survivors are one daughter and one son, Alfred D. Macfarlane, a mining engineer for many years with the Lehigh Valley Coal Co., and lately with the Consolidated Coal and Coke Co., at Pocahontas, Va.

INDUSTRIAL NEWS

New York, N. Y.—The Lenher Engineering Co., sales agents for the S. Flory Mfg. Co., hoists and cableways, announces that on and after Feb. 7, 1916, its office will be located at 95 Liberty St., New York City.

Buffalo, N. Y.—The Lake Erie car ferries from Conneaut to Canada are closing up their season, as Lake Erie is freezing over. No more coal will be received unless another open season is in prospect.

Columbus, Ohio—Burglars recently entered the office of the Murray City Coal Co., located on West Fifth Ave., and after laboring for several hours on the safe, were rewarded with 58c. in money and 24c. worth of stamps.

Buffalo, N. Y.—Anthracite shippers have suspended loading into Lake vessels after putting about 40,000 tons afloat on spring delivery, on account of short supply. It is understood that the rate will be 10c. over last season.

Lynchburg, Va.—On Feb. 1 the Chesapeake & Virginian Coal Co. commenced business at 710 Peoples Bank Bldg. as distributors of best grade New River, Pocahontas, splint and gas coals, covering all sections wherein these coals may be marketed.

St. Louis, Mo.—The tonnage of the Coöperative (Winkle) mine of the Granger Coal Co., until recently handled by the Bald Eagle Mining Co., will now be sold partly through the Graves Coal Co., of this city and partly through a direct sales representative of the mining company.

Shamokin, Penn.—The car shortage has again assumed serious proportions at the mines in this territory. For several days recently the collieries of both the Susquehanna Coal Co. and the Philadelphia & Reading Coal and Iron Co. were compelled to suspend entirely for the lack of cars to load.

Buffalo, N. Y.—Arrangement is practically completed by which the Fairmount mines, in the Allegheny Valley, for several years operated by E. L. Hedstrom in Buffalo, are to be leased to L. F. Bader and others by purchase of the Hedstrom lease. Possession is to be given at once. The Hedstrom firm will retire temporarily from coal mining.

Antelope, Mont.—A partnership was recently formed between local business men creating the Antelope Coal Co. This firm will commence operating lignite mines at a point adjoining the edge of the town, as soon as the necessary material and machinery can be secured and placed on the ground. The men who formed this partnership are O. B. King, Ellis B. Dowmand and William Gottlieb.

Connellsville, Penn.—S. J. Foye, of Brownsville, recently sold to John Austin, of Redstone Township, one-half interest in 115 acres of Pittsburgh vein coal in Gilmore Township of Green County. The consideration is stated as \$1. Harry L. Hagan and Charles Hagan, of Gilmore Township, recently sold two tracts of Pittsburgh vein coal in Gilmore Township, Green County, containing 143½ acres, for a consideration of \$28,700.

Freeland, Penn.—Following out the original intention, the Lehigh Navigation Electric Co., a subsidiary of the Lehigh Coal and Navigation Co., is working on the extension of its power transmission lines north and south in the direction of New York and Philadelphia respectively. The company's electric plants here and at Hauto have been so rapidly developed that they are consuming a large proportion of the steam-coal sizes produced by the coal company.

Rossmore, Penn.—As a result of negotiations recently closed, the Clearfield Bituminous Coal Corp. has secured a tract of land which will permit it to greatly increase its facilities for securing a more adequate water supply. A new water reservoir will be built, and while the plans of this reservoir have not yet been drawn, it is understood that the capacity of water storage will be largely increased and that the supply if found sufficiently pure, will be used not only for supplying the boilers but for house purposes as well.

Harrisburg, Penn.—The Public Service Commission has suggested that the Pennsylvania Railroad Co. and western Pennsylvania coal operators who object to the company's rule refusing cars for loading from wagons instead of at mines, should get together on a rule which will enable the company to protect itself against delays by a demurrage or penalty system. The company contends that the extraordinary demand for cars due to the heavy buying in fear of a strike and the foreign shipments and industrial requirements require it to keep cars moving.

Harrisburg, Penn.—Pennsylvania's Department of Mines will represent the mining interests at the conference to be held at Washington, D. C., during February under the auspices of the Department of the Interior for the purpose of discussing safety work and getting together on forms for reports and for general uniformity in legislative and other matters. This conference will bring together the men in charge of the supervision of mines of every state and suggestions for legislation will be drawn up. Frank Hall, Deputy Chief, will represent the state's mining department.

St. Louis, Mo.—Officials of railroads operating eastward from Chicago and St. Louis, still report an enormous volume of tonnage and considerable difficulty in handling it promptly because of the cold and stormy weather. There is no abatement of industrial activity in the territory of these roads, and, of course, this is being reflected favorably elsewhere. Westbound tonnage is increasing slowly. Business generally in considered good. Officials of Southern roads report tonnage as about 10 per cent. greater than during the same period last year, and that it is more diversified than usual.

Knoxville, Tenn.—The sale of the properties of the La Follette Coal, Iron and Railway Co. and the La Follette Iron Co., at La Follette, Tenn., on Dec. 17 last by the receiver to the La Follette Coal and Iron Co., of Boston, Mass., was recently confirmed by the Federal Court here. These were the outcome of the equity cases of the Electric Corporation of Boston against the La Follette Coal, Iron and Railway Co., and Neil Robinson, receiver of the latter company against the La Follette Iron Co. It is understood that Mr. Robinson, who has been receiver for both the defendant companies, will head the new company. It is reported that Col. Harvey M. La Follette, of New York (who, before the receivership, was president and general manager of the La Follette Coal, Iron and Railway Co.), has an option from the new company on the properties, at the price paid for them by the new company.

Washington, D. C.—At a hearing before the House Naval Affairs Committee, Rear Admiral McGowan, paymaster general of the Navy, stated that the only bituminous coal that met the requirements for use on battleships was that mined in the Pocahontas, New River, Georges Creek and Pennsylvania fields. It was drawn to his attention by one of the congressmen present that a fine grade of coal had been made available from the Alabama district by the deepening of the Warrior River. Admiral McGowan stated he had no knowledge of this, but that he would investigate. The hearing had been called for the purpose of ascertaining, if possible, whether the expense of fuel for the navy could not be reduced. The further fact was also brought out that on the Pacific Coast oil was much cheaper for warships than coal, but Admiral McGowan thought this would be changed on the completion of the Government railroad in Alaska, which would release the fuel of that territory for naval use.

Market Department

General Review

Slight easing up on anthracite due to high temperatures. Bituminous situation decidedly mixed and largely controlled by transportation facilities. Exports again increasing rapidly. Technically strong position of the Middle West market.

Anthracite—Unexpected and unprecedented high temperatures have relieved the strain on the market, and given the dealers a welcome opportunity to partially replenish their depleted stocks in preparation for the next heavy rush. Orders are still plentiful, though not of the urgent description that has characterized the past several weeks. There are no indications of any easing up in prices, and dealers are holding off pending developments, confident of a return of the recent activity. The labor conferences of the miners and operators have now become a definite factor in the situation, though the deliberations to date have had no effect. The warm weather has resulted in some orders being held up, and frequently cancelled entirely, but in no case is coal plentiful and the situation is still generally firm.

Bituminous—The situation as regards supplies is still tight, though record-breaking high temperatures have relieved the severe pressure for coal and created a reactionary tendency. Free coal still commands fancy prices, but, with the increased movement, larger tonnages are available at the distributing centers and a continuation of this condition for any protracted period will soon develop a definite recession. Sales agencies are not willing to admit any serious prospects of a relapse and are very conservative over future commitments. Indications point to higher prices on new contracts, but the situation is so involved with many uncertainties, that negotiations so far are purely tentative and the outlook is by no means well defined as yet.

Exports—The demand for coal abroad has become so urgent that the offshore movement is showing a most impressive increase in spite of the constantly advancing vessel rates. The dumpings at Hampton Roads over the past several weeks have shown a persistent increase, and range well above all previous records excepting those which marked the culmination of the heavy movement of last August. Tidewater supplies are down to a low point, and some shippers are experiencing difficulty in finding sufficient coal to fill out their cargoes. It is not improbable that vessel rates may soften in the course of the next few weeks.

Ohio Valley—The wage-scale conferences are developing uncertainties in the situation but without any definite effect as yet; high temperatures and transportation difficulties have been the controlling factors in the week's developments. Prices continue stiff at the more congested centers, but show a softening tendency at points where free movement is obtainable. Steam consumers fail to evince any very active interest in the market and are apparently buying only sufficient to keep them going. Screenings are rather strong due to the reduced production of this size and there is tendency to crush mine-run in order to make up the deficiency. Shippers are apparently making little progress in negotiations on vessel tonnage for Lake shipments during the coming season.

Middle West—The rise in temperature has accelerated the movement, and the large tonnages ordered during the recent cold snaps are beginning to come in, while the demand has eased up a trifle, and the situation is slightly softer, as compared with the panicky conditions recently prevailing. However, the entire production of a great many operators is covered for some time to come, and there is no indication of any reduction in the volume of orders. The position of sellers in negotiations on new contracts is conceded to be the strongest for several seasons. The unsettlement in labor circles, together with the steadily increasing storage operations, supplemented by the persistent expansion in the industrial consumption, has made the operators unusually conservative over future commitments. Violent storms in the Northwest have forced temporary suspensions of operations at the Upper Lake docks, increased the demand and delayed the movement, so that the situation is definitely stiffer.

A Year Ago—Severe weather relieves the pressure on anthracite, and working schedules are increased. Uncertainties developing in bituminous. Spectacular advance in ocean freights causing general uneasiness. The trend of conditions on new contracts generally satisfactory.

BUSINESS OPINIONS

Boston News Bureau—The situation in its entirety is naturally somewhat irregular and sensitive. Nothing more could be expected with the present world's unsettlement. Commodity prices are high because of the enormous world's demand. For this reason demands are curtailed largely to necessities, and even then the supply is not sufficient. Were these extraordinary demands suddenly to lessen, then, of course, prices would decline sharply. This is generally recognized and keeps people more or less disturbed. But no man is sufficiently far-seeing to predict when this time will come. The only course is to meet conditions as they exist. It is either to accept this policy or go out of business. At present the country is piling up profits at an enormous rate. Annual statements are now coming to hand which furnish the necessary evidence. But we have become so used to all this that we can hardly appreciate its meaning. The speeches of President Wilson throughout the West are bringing the question of preparedness before the people. They are effective because they treat of a subject that is really new to us.

Iron Age—Pig iron production in January fell off slightly from the December rate, but the loss was due entirely to the strikes at Youngstown. The 45,000 tons reduction there was nearly made up by the blowing in of furnaces in other districts. In January the country's output was 3,188,344 tons, or 102,850 tons a day, against 3,203,322 tons in December, or 103,333 tons a day. There was a net gain of 12 in the number of active furnaces last month, 307 being in blast Feb. 1, with a capacity of 107,172 tons a day, against 295 on Jan. 1 with a capacity of 105,400 tons a day.

Dun—Pressure upon productive forces continues a feature, and the disposition in some quarters to extend commitments into 1917 has a significant bearing on the future. Much forward business is in prospect, but with full operations already assured for months to come industrial interests are reluctant to accept contracts for next year. In a few instances, rising prices have a tendency to restrict buying, while some orders are withheld because of the congestion in both producing and distributing channels that make deliveries uncertain. Commercial failures this week in the United States are 442, against 462 last week, 453 the preceding week and 619 the corresponding week last year.

Bradstreet's—Mild weather in some sections and storms in others have checked retail trade, but in every other respect, movements continue at a smart pace, and in the larger aspects, practically all reports are stamped with evidence of uniform activity. Jobbers are busy making spring shipments, house as well as road sales show gains, buyers of dry goods are out in large numbers seeking quantities that they cannot get in all cases, due to the dyestuffs shortage and some consumers of steel seem willing to commit themselves as far ahead as 1917.

Marshall Field & Co.—Current wholesale distribution of dry goods has been in excess of the corresponding period of a year ago. Road sales for immediate delivery are well ahead, and continue strong for later spring delivery. Many lines for fall are now being shown and sales are well ahead of those of a year ago. Customers have been in the market in much larger numbers. Great interest is being shown in Chicago Market Week and Fashion Show, to be held the week of Feb. 7, and indications are that a record-breaking number of merchants will be here for that event. Collections are normal. The cotton-goods market is strong, and prices are advancing.

Southern Lumberman—Weather conditions which remained unfavorable throughout much of the Northern and Western territory, has again served to limit retail demand during the past week, and to delay somewhat the buying expected from that source. In addition to this should also be considered to some extent the distracting influence of numerous retail association meetings which are being held at this time of the year. Railroad buying has rapidly expanded, and has, in fact, been the feature of the market during the past week.

ATLANTIC SEABOARD

BOSTON

Pocahontas and New River move freely from Hampton Roads and dispatch continues excellent. Delivered prices easier. Georges Creek now likely to come forward in small quantities. Pennsylvania grades somewhat off, but anthracite shipments show no sign of speeding up.

Bituminous—The mild weather has a continuing effect on the market. While the price of Hampton Roads coals is generally firm at \$2.85 f.o.b., supplies are apparently large enough to permit prompt loading in most cases. The shippers who are dumping cars in good time are able to keep their miners at work; so marked is the tendency of labor to move to other districts on the least sign of slow work that the ability to keep coal moving to the piers is a very important element just now in the West Virginia situation. Rumors are heard in connection with f.o.b. contract business for the year beginning Apr. 1, but there is an opinion it is rather early to settle on prices because of the uncertainties.

Prices alongside Boston and Providence for cargoes either en route or yet to load are off slightly; \$6 is now a high figure even for the choicest grades of Pocahontas and New River, and practically all the agencies agree that the demand is spotty. If buyers are considering further purchases at high prices they are inclined not to go into the open market but deal with parties who are supplying them at present.

Shipments of Georges Creek are now looked for in the course of the week via Philadelphia and New York, although the tonnage is likely to be small on account of car-supply. A large number of B. & O. cars are reported held on other roads, and until this situation is remedied coal from the Maryland and upper West Virginia districts will come through only in dribbling amounts.

Prices on the Pennsylvania grades for delivery all-rail are much easier, although there has been no further marked reduction in price. Coal is now coming through in fairly good time, much of the congestion having been relieved. Most of the embargoes have now been raised and while shipments are still slow for the lack of equipment and shippers are far behind on contracts there is nothing like the anxiety that prevailed three weeks ago.

Water Freights—There is some apprehension on the part of those who still have two to three trips of vessels yet due them on high rates that marine quotations will soften materially in the course of a few weeks. Transportation owners naturally chartered their boats as far ahead as there were takers, and while there is very little spot tonnage available of any kind there is now an inclination to let boats work out their present charters before engaging them further. Owners of steamers, too, are modifying their rates and not only extending the number of lay-days but reducing the demurrage clause. From New York to Long Island Sound ports freights have eased off to \$1.50@1.75, although open-hatch barges command a slightly higher price.

Anthracite—The movement of barges had just begun to improve when fogs set in and the trade experienced some more of the delays to which dealers this side of Cape Cod are now almost reconciled. By borrowing from their neighbors most of the retailers are managing to squeak by without being absolutely bare of all sizes. The proportion of the latter at the loading ports is still erratic, and heavy drafts are already being made on the storage piles. Dealers in New England are looking forward with much interest to the first anthracite conference on Feb. 21.

Bituminous prices, f.o.b. loading ports at points designated, are about as follows, per gross ton:

| | Philadelphia | New York | Baltimore | F.o.b. Mine |
|-------------------------|--------------|-------------|-----------|-------------|
| Clearfields..... | \$3.75@4.25 | \$4.00@4.60 | | \$2.35@2.60 |
| Cambrias and Somersets. | 4.00@4.50 | 4.35@4.75 | | 2.75@3.00 |
| Georges Creek..... | | | | |

Clearfields delivered alongside Boston at \$5.50@5.75. Pocahontas and New River are quoted \$2.85, f.o.b. Norfolk and Newport News, Va. On cars at Boston and Providence, Pocahontas and New River are quoted at \$6@6.50.

NEW YORK

Anthracite demand easier, but dealers are not anxious to sell. Steam coal lower than last week. Dealers optimistic as to outcome of labor negotiations. Call for bituminous coal not so heavy, and prices lower. Car supply and labor scarce.

Anthracite—Lack of demand due to weather conditions was a feature of the hard coal market early this week. Dealers on Monday were not quoting freely, preferring to hold off pending developments. While quotations on steam sizes

were lower, no one seemed over-anxious to sell and all were waiting for colder weather to restore prices to their former level.

Heavy freight congestion continues on most railroads, but there is some improvement in New England and Long Island. The milder weather has aided the roads in making deliveries, but the heavy morning fogs have retarded water deliveries and harbor rates have dropped to from 23 to 25c.; a week ago they were as high as 55c.

Some premiums are noted on prepared coals at Tidewater, but they are not more than 10c. a ton and were on individual coals. The companies are able to take care of their regular customers' needs. Quotations for steam coals show a decline of from 25 to 50c. a ton.

Quotations, for gross tons, f.o.b. at Tidewater, follow:

| | Lower Ports | | Upper Ports | |
|----------------|-------------|-------------|-------------|-------------|
| | Circular | Individual | Circular | Individual |
| Broken..... | \$5.05 | | \$5.10 | |
| Egg..... | 5.30 | \$5.30@5.30 | 5.35 | \$5.35@5.35 |
| Stove..... | 5.30 | 5.30@5.40 | 5.35 | 5.35@5.45 |
| Chestnut..... | 5.55 | 5.55@5.65 | 5.60 | 5.60@5.70 |
| Pea..... | 3.50 | 3.75@4.00 | 3.55 | 3.80@4.05 |
| Buckwheat..... | 2.75 | 3.50@3.75 | 2.80 | 3.55@3.80 |
| Rice..... | 2.25 | 3.25@3.50 | 2.30 | 3.30@3.55 |
| Barley..... | 1.75 | 2.75@3.00 | 1.80 | 2.80@3.05 |

Bituminous—The bituminous coal market at Tidewater was much easier the first of the week. There was a drop of from 25 to 50c. in f.o.b. prices and good grades could be had at from \$2 up at the mines, according to the road over which shipment was to be made. There was plenty of coal at Tidewater to meet all demands, but shippers were not looking for buyers, preferring to hold off in anticipation of further advances. New York again proved itself to be a weather market.

Car supply continues bad and operators complain of labor scarcity. Shippers are not willing to commit themselves to quotations extending over any appreciable period. Demand has dropped, owing to weather conditions, and there does not seem to be as strong a tendency on the part of large consumers to keep their bins filled. As in the anthracite situation bituminous shippers feel that operators and miners will soon reach an agreement on a new working contract. A few days of cold weather would, however, set the market on its edge again and shippers would find themselves working day and night.

Average quotations, gross tons, f.o.b. Tidewater, follow:

| | South Amboy | Port Reading | St. George | Mine Price |
|-----------------------------|----------------|-----------------|-------------|---------------|
| Georges Creek Big Vein..... | \$4.50@4.75 | \$4.50@4.75 | \$4.50@4.75 | \$2.95@3.20 |
| Georges Creek Tyson..... | 4.00@4.25 | 4.00@4.25 | 4.00@4.25 | 2.45@2.70 |
| Clearfield: | | | | |
| Medium..... | 3.90@4.00 | 3.50@4.00 | | 2.35@3.45 |
| Ordinary..... | 3.90@4.00 | 3.90@4.00 | | 2.35@2.45 |
| Broad Top Mountain..... | | | | 2.50@2.90 |
| Cambria County: | | | | |
| South Forks..... | 4.00@4.25 | | | 2.45@2.70 |
| Nanty Glo..... | 4.20@4.25 | | | 2.65@2.70 |
| Barnesboro..... | 3.90@4.00 | | | 2.35@2.45 |
| Somerset County: | | | | |
| Quemahoning..... | | 4.00@4.25 | 4.00@4.25 | 2.45@2.70 |
| Medium..... | 3.90@4.00 | 3.90@4.00 | 3.90@4.00 | 2.35@2.45 |
| Latrobe..... | 3.75@3.90 | | | 2.20@2.35 |
| Greensburg..... | 3.75@3.90 | | | 2.20@2.35 |
| Westmoreland..... | 3.75@3.90 | | | 2.20@2.35 |
| West Virginia Fairmont..... | | 3.50@3.75 | 3.50@3.75 | 1.70@1.95 |
| Fairmont mine-run..... | | 3.50@3.75 | 3.50@3.75 | 1.70@1.95 |
| Steam..... | | 3.50@3.75 | 3.50@3.75 | 1.95@2.20 |
| Western Maryland..... | | 3.75@3.90 | 3.75@3.90 | 2.20@2.35 |

PHILADELPHIA

Warm weather relieves pressure on anthracite, but demand continues. Stove and egg very active. Big shipments of small sizes from storage. Embargo causes drop on high grade bituminous. Other prices firm, with demand heavy.

Anthracite—Remarkably warm weather, with the temperature going as high as 74 deg., has relieved the strain on the market. Dealers have had an opportunity to replenish their stocks and prepare for the next rush. In spite of the warm weather orders for egg, stove and chestnut are still in excess of the supply, due to the car shortage.

There would be a dearth of pea, buckwheat and rice were it not for the large supplies in storage which are now being called on. It is understood that one of the large companies has refused to book any additional orders for pea, while it is intimated that the price may again be increased soon. There was a slight reaction in buckwheat and rice, but no coal can be bought in the open market at the circular prices of \$1.55 and 90c., rice never selling for less than \$1.25. Any slackening in the demand is due to the fact that many small manufacturers, with limited storage capacity, have had their present needs satisfied.

Of the larger sizes stove coal is undoubtedly the leader and many early January orders remain unfilled. Chestnut continues in strong demand and an enormous tonnage was shipped last month. Egg coal had a wonderful spurt.

OHIO VALLEY

PITTSBURGH

Wage-scale negotiations watched with interest. Car supply slightly improved. Shipments to East blocked by embargoes.

There has been no particular change in the coal market that can be attributed to the proceedings of the mine workers in convention at Indianapolis. Experience has shown that inferences drawn from the declared attitude of miners or operators, in advance of conferences, are as likely as not to prove erroneous.

The market is practically a demand and supply proposition, modified at different places by conditions as to transportation. At points there is stiffness in prices on account of difficulties in transport, but on some divisions the market is undoubtedly lower than it would be if there were a free movement of coal toward the East. The embargoes in that direction are practically complete. Demand for domestic coal has been exceptionally light, in keeping with extremely mild weather. All records for high temperature at this time of year were broken last week.

Some operators report car supplies slightly better than a week ago, due to the railroads making strenuous efforts to relieve the situation, coupled with the exceptionally favorable weather for the time of year. Labor is somewhat scant at points but in general this is not an important factor in controlling production.

Prices in general are a shade firmer than a week ago, but quotations of last week practically represent the situation this week, as follows: Slack, \$1.35@1.60; mine-run, \$1.50@1.75; ¾-in., \$1.60@1.85; 1¼-in., \$1.75@2, per net ton at mine, Pittsburgh district.

BUFFALO

Some easing up in bituminous market, due to raising of embargoes. Car shortage still restricts operations. Anthracite suffers from warm weather.

Bituminous—The raising of the Eastern embargoes has made it difficult to sell at former prices. Consumers have dropped out of the market and left the coal on jobbers' hands. At the same time there is complaint that cars have run short, so it is much of a stand-off. The actual consumption is large and promises to continue, so the shipper feels safe till cars are plentiful again.

Buffalo is profiting from the fact that it has been easy to get plenty of coal from Ohio districts where the market is not so favorable. The market will eventually return to former conditions and quotations are those offered by Pittsburgh and Allegheny Valley, though much of the coal actually used is from the No. 8 and neighboring districts, which sells at from \$2.50 to \$3, f.o.b. Buffalo for three-quarter.

Quotations are on the following basis:

| | Pittsburgh | Allegheny Valley | Penn. Smokeless |
|--------------------|------------|------------------|-----------------|
| Lump..... | \$3.65 | \$3.60 | \$3.50 |
| Three-quarter..... | 3.50 | 3.45 | ... |
| Mine run..... | 3.40 | 3.35 | 3.30 |
| Slack..... | 2.80 | 2.70 | 3.30 |

Prices are per net ton, f.o.b. at destination, except that east of Rochester and Kingston, Ont., they are per gross ton.

Anthracite—There is slow sale in this district, on account of the warm weather. On Jan. 27 and 28 the high temperature record was broken for 36 years. Shippers began the week with good bookings, but before cars could be started the orders to delay began to come in and these were soon followed by cancellations. The only favorable feature was that coal was not plenty and the eastern trade was better.

As the coal goes west from here the trade improves. Chicago is called fair by the anthracite shippers who cover it and the far Northwest, with Winnipeg as a center, is using a large amount of fuel, on account of the continued zero weather. February is usually the best coal month in the year and much is expected from it. Buffalo has stopped loading anthracite into Lake vessels; there was so little surplus that it was thought best to suspend till towards spring. Following are winter circular prices:

| | Cars | Vessels | Wagons | Curb |
|----------------|--------|---------|--------|--------|
| Grate..... | \$5.60 | \$5.85 | \$5.40 | \$6.65 |
| Egg..... | 5.85 | 6.10 | 5.65 | 6.90 |
| Stove..... | 5.85 | 6.10 | 5.65 | 6.90 |
| Chestnut..... | 6.10 | 6.35 | 5.90 | 7.15 |
| Pea..... | 4.30 | 4.55 | 4.10 | 5.35 |
| Buckwheat..... | 3.25 | 3.50 | 3.05 | 4.30 |

Deliveries are per gross ton on cars and vessels and per net ton on wagons and at curb. An additional charge of about 25c. is made where it cannot be spouted into bin.

DETROIT

Interest in steam coal is not active. Buying of domestic stock diminishes with high temperatures. Anthracite remains sluggish. Contracts for Lake transportation delayed.

Bituminous—Consumers of steam coal have relapsed into an apathetic attitude. With a threatened suspension of operation at the mines the present situation provokes criticism by shippers, especially in view of the circumstance that factories and industrial plants are active. Steam consumers are buying only when actually forced to do so by reduced stocks. Small sizes are in strongest demand and the supply is still restricted by shipments to Eastern markets.

High temperatures suggestive of spring, have seemingly dissipated any desire to buy domestic coal. The amount of consignment coal is not excessive and is having little or no effect on prices. Congestion on tracks and sidings of the Grand Trunk is still a factor.

Anthracite—Interest in anthracite is very slight, judging from the volume of sales. The supply is plentiful and prices remain at schedule, in contrast to the situation in Eastern markets where buyers are reported to be paying an advance over the circular.

Lake Trade—Shippers appear to be making little progress in obtaining vessel capacity for movement of coal over the Lake route during the coming season. Iron-ore shippers continue to have first call on the boats. During the week one ore shipper closed a contract covering the movement of a large ore tonnage for five years, the freight charge to be the going rate of each season.

COLUMBUS

Warmer weather has slowed down the domestic trade in Ohio during the past week. Steam business is still strong and prices firm all along the line. Future prospects are bright.

The continued warm weather has caused a slight lull in the domestic demand, though prices have not weakened, however, and the general tendency is to maintain quotations. Steam business is active in every locality and premiums are freely paid for spot deliveries. The tone of the market is generally satisfactory and future prospects are bright.

Manufacturing continues to expand on every side and with it is an increased demand for fuel. Many of the larger consumers have been buying in the open market at almost any price, as their contracts are hard to fulfill. This is especially true of nut, pea and slack and coarse slack which is selling between \$1 and \$1.10. Crushers have been employed to make these sizes from mine-run, the demand being so strong.

Retail trade has been a little slow because of the warm weather, but prices are still maintained at former levels. Retail stocks are only fair and the policy appears to be to buy as needed. Some of the larger dealers, however, are stocking up in anticipation of a prolonged cold spell. There is a good demand for the fancy grades, such as Pocahontas and West Virginia splints.

Prices in Ohio fields, f.o.b. mines, per short ton, are as follows:

| | Hocking | Pomeroy | Eastern Ohio | Kanawha |
|-------------------------|---------|---------|--------------|---------|
| Re-screened lump..... | \$1.60 | \$1.70 | ..... | ..... |
| Inch and a quarter..... | 1.50 | 1.50 | \$1.40 | \$1.50 |
| Three-quarter-inch..... | 1.40 | 1.40 | ..... | 1.40 |
| Nut..... | 1.25 | 1.30 | ..... | 1.25 |
| Mine-run..... | 1.20 | 1.25 | 1.05 | 1.20 |
| Nut, pea and slack..... | 1.10 | 1.10 | 1.00 | 1.05 |
| Coarse slack..... | 1.00 | 1.00 | .90 | .95 |

CLEVELAND

Poor car supply causes a slight shortage of coal. Much inquiry for delivery prior to Apr. 1.

A shortage of cars on practically all roads supplying this market with Ohio coal reduced the supply of steam coal considerably, and as a result a large number of steam buyers are calling on shippers for additional tonnage. The roads affected report fairly good car supplies in sight, and the next few days should bring conditions back to normal. The decreased shipments from the mines allowed the railroads to move practically all the loads which have been blocking the yards and better switch movement is promised for the coming week.

Continual inquiries are being received for prices on tonnage for delivery prior to Apr. 1, but most shippers are reluctant to quote on other than spot shipments, feeling that the uncertainty of the car supply and other factors scarcely warrant their assuming additional contract obligations carrying them up to that date.

Following are prices being quoted the jobbers on short tons, f.o.b. Cleveland:

| | | | |
|---|--------|-------------------------------------|--------|
| Cambridge and Middle District slack..... | \$2.10 | Pittsburg No. 8 1-in. lump..... | \$2.30 |
| Pittsburg No. 8 and Kentucky nut and slack..... | 2.20 | Bergholz 6-in. lump..... | 2.40 |
| Cambridge 1-in. lump..... | 2.20 | Massillon 24-in. lump..... | 3.20 |
| | | Pocahontas lump (in goodolals)..... | 3.45 |
| | | Pocahontas lump (in hoppers)..... | 3.30 |

TOLEDO

Market slightly easier. Heavy Lake movement expected.

Since the armistice between the operators and miners the heavy buying of coal for stocking purposes has decreased. It is generally believed here that spring will find light supplies of coal at the upper docks and that navigation will begin early, weather permitting. There is an unusually large number of freighters wintering at the Toledo docks and it is believed that these boats will all get an early start. There is little coal in the local yards this winter.

CINCINNATI

Continued low production of domestic grades has stimulated mine-run. Car supply remains poor.

Extraordinarily mild weather has done away with hopes of a revival of the domestic demand. Dealers are doing practically no business, and their stocks still on hand are apparently ample for the rest of the season. The small amount of coal being shipped, due to the limited car supply, steadies the market up to some extent, but cannot strengthen it in the absence of a good demand. The result has been a corresponding stimulation on the steam side, especially in screenings; the low production of this latter grade has diverted the demand to mine-run, which is stronger than for some time in all sections. Up to \$1.20 per short ton f.o.b. mines has been paid for the better grades of Kanawha mine-run during the week, which is 20 to 30c. above recent prices.

COKE**CONNELLSVILLE**

Car supply continues adequate. Prices softer, then stronger. Coke delayed enroute reaching destination.

The adequate car supply with which last week opened continued practically through the week, with slight shortages here and there in the two closing days. This week has again opened with a full supply and it is probable the car troubles are practically over except as bad weather may cause trouble from time to time. For the past fortnight the weather has been exceptionally favorable.

The market for spot furnace coke turned soft rather suddenly when the operators had had two or three days of full car supplies, and as compared with the highest price paid week before last, when cars were so scarce, \$5, there were sales at as low as \$2.75. Such a price, however, seems to have overshot the market, as late last week \$3.25 was paid in several instances for first-class brands, other brands being available at about 25c. less, and this market range has continued thus far this week.

Sufficient time has elapsed to permit the trade to take stock, at least partially, of what the car shortage did to the coke situation. It develops that not a great deal of production was lost, as the ovens that practice hand loading stocked the coke they could not ship, in nearly every instance. The furnaces, which became so short of coke, found that while shipments were light there was a great deal of coke delayed in transit, and it has been coming in very freely, with the result that a few furnaces have rather too much, and there are rumors that suspensions of shipments have been ordered in two or three instances. A sale of a round tonnage of coke for shipment to Mar. 1 has been made at \$2.50. We quote the market as follows: Spot furnace, \$3@3.25; contract, first half, \$2.35@2.50; year, \$2.25@2.35; spot foundry, \$4@4.50; contract, \$3.25@3.75, per net ton at ovens.

The "Courier" reports production in the Connells ville and lower Connells ville region in the week ended Jan. 22 at 400,806 tons, a decrease of 19,715 tons, and shipments at 382,144, a decrease of 28,045 tons.

Buffalo—There is no real stock coke on the market. When there is a call for it, off-grade furnace coke is offered as being the nearest that the ovens can produce. Quotations remain at \$6 to \$6.25 for best 72-hr. Connells ville foundry and \$4.85 to \$5 for 48-hr. furnace.

Chicago—Stringency in supply of coke still continues, and prices are firmly held at last week's figures. All sizes are in most active demand. Prices per net ton, f.o.b. cars Chicago, are as follows: Byproduct foundry, \$6@6.25; byproduct domestic, \$4.95@5.25; Connells ville, \$6.50@6.75; Wise County, \$6.25@6.50; gas house, \$4.50@5.

St. Louis—The movement of coke has suffered a slight recession as the result of mild weather and light domestic demand. A quick return to more active conditions is anticipated. Industrial demand holds up well. The following prices are in effect, f.o.b. cars St. Louis: Byproduct (all sizes), \$5; gas house (lump and egg), \$4.25; petroleum (lump), \$6.75.

MIDDLE WESTERN**GENERAL REVIEW**

Brisk demand for domestic coals but warmer weather slows up buying. Steam coals show added strength noticeably screenings. Smokeless and anthracite show buoyancy.

The rise in temperature has afforded relief to operators who have an accumulation of unfilled orders for all grades and are unable to secure prompt movement. Sporadic car shortages have occurred. The general market is in the best position for several years and with another cold wave predicted, the shortage of coal will be even more severely felt.

Additional strength in the domestic sizes, together with strong movement in steam grades, particularly screenings, have been the salient features of the Western coal trade during the past week. Some Illinois operators report that they have sufficient orders booked ahead to take care of their maximum production well into the middle of next month. Notwithstanding moderate weather during the last few days with an easing up in demand, orders still come forward in good volume and with no softening in prices or accumulations at the mines. Washed coals from Central and Southern Illinois mines are very strong, and output hardly meets the demand. Increased tonnage of Illinois and Indiana steam coals has been going forward to Iowa, Nebraska and Northwestern points due to decreased production of Iowa mines from various causes.

Steam coal buyers are finding it increasingly difficult to make contracts or renew old agreements. Shippers feel that with the augmented demand from industrial sources, which is bound to show still further increases, wage negotiations still unsettled, and supply of labor showing tendencies to become short, they are not anxious for contract business unless at a premium. The smokeless situation at Western trade centers is much improved, and mine-run generally has been sold at circular, with the screened sizes bringing higher prices. Screenings have generally scored further advances of at least 10c. per ton.

INDIANAPOLIS

Recent cold snap reduced supplies of domestic lump and quotations stronger. Screenings easier. Good buying for storage purposes.

The feature of the Indiana trade just now is the stiffer prices for domestic lump. The best sells for \$1.75 a ton f.o.b. mines and standard grades at \$1.65. The screenings market is easier, particularly at Chicago, which practically sets values for this grade of coal in the Indiana field. Ninety cents is the best price now as compared to \$1, the top mark for a few days recently. Railroads and other large buyers are stocking against a possible suspension of mining. Car troubles are still felt. There has been no change in retail prices and they seem to be fixed for the remainder of the winter unless a strike or prolonged severe spell of cold weather comes.

CHICAGO

Easing up of demand for domestic sizes due to moderating weather. Steam coals in urgent demand at increased prices. Eastern grades stronger.

Franklin and Williamson County coals have been in strong demand both for domestic and storage use. Some of the railroads have discontinued taking storage coal this week owing to favorable reports from Indianapolis concerning the new wage agreement with the miners. Some of the mines are several weeks oversold on various grades. Screenings have reached the high-water mark of \$1.05 and \$1.10 per ton. Saline County conditions are much the same. Carterville domestic lump and egg have been in steady demand and washed coals from that district very active at high prices.

The demands for Springfield coal have exceeded supply, large quantities being shipped for storage and current steam purposes. Screenings have averaged from 85c. to 90c. per ton.

Clinton and Sullivan County coarse domestic sizes have been averaging near the \$1.75 mark. Steam sizes from Clinton and Knox Counties are very strong. Indiana operators report good movement and steady supply of cars. Absorption of domestic coals by Indianapolis retailers has been heavy.

Pocahontas and New River mine-run has been sold readily at full list price; lump, egg and nut averaging 10c. higher than last week. No spot Pennsylvania smokeless is in evidence in this market.

Hocking coals are in strong position owing to unfilled orders held over.

Kentucky grades have shown improvement in this territory, high-grade block ranging around \$2.40, egg \$2 and nut \$1.75. The lower grades of block have yielded around \$2.

Quotations in the Chicago market are as follows:

| | Williamson and Franklin Co. | Springfield | Sullivan | Clinton | Knox and Greene Cos. |
|--------------------------------------|-----------------------------|-------------|-------------------------|------------------|----------------------|
| Lump..... | \$1.60@1.75 | \$1.60@1.75 | \$1.60@1.75 | \$1.50@1.75 | \$1.50@1.60 |
| Steam lump 2 1/2 and 3-in. lump..... | 1.25@1.30 | 1.30@1.35 | 1.30@1.35 | 1.35 | 1.35 |
| 1 1/2-in. lump..... | 1.40@1.50 | 1.35 | 1.25@1.35 | 1.35@1.40 | 1.35 |
| Egg..... | 1.60@1.75 | 1.65 | 1.20@1.25 | 1.25@1.35 | 1.25@1.35 |
| Nut..... | 1.60@1.75 | 1.65 | 1.15@1.25 | 1.15@1.25 | 1.05@1.15 |
| No. 1 washed..... | 1.75 | 1.50 | 1.50 | 1.50 | 1.50 |
| No. 2 washed..... | 1.50 | 1.40 | 1.40 | 1.40 | 1.40 |
| No. 1 nut..... | 1.75 | 1.50 | 1.50 | 1.50 | 1.50 |
| No. 2 nut..... | 1.60 | 1.50 | 1.50 | 1.50 | 1.50 |
| Mine-run..... | 1.15 | 1.05@1.10 | 1.00@1.10 | 1.10@1.15 | 1.20 |
| Screenings..... | .95@1.10 | .85@.90 | .85@.95 | .90@.95 | 1.05@1.10 |
| | Harrisburg & Saline Co. | E. Kentucky | Pocah. & W. Va. Smok'l. | Penna. Smokeless | Hocking |
| Lump..... | \$1.60@1.75 | \$1.90@2.40 | \$1.90@2.00 | \$2.00@2.25 | \$1.85@2.00 |
| 1 1/2-in. lump..... | 1.40@1.50 | 1.50@2.00 | 1.90@2.00 | 2.00@2.25 | 1.50@1.60 |
| Egg..... | 1.50@2.00 | 1.25@1.50 | 1.65@1.75 | 1.65@1.75 | 1.75@1.85 |
| Nut..... | 1.60@1.75 | 1.50@1.60 | 1.25 | 1.25 | 1.25 |
| No. 1 nut..... | 1.60@1.75 | 1.50@1.60 | 1.25 | 1.25 | 1.25 |
| No. 2 nut..... | 1.50@1.60 | 1.25 | 1.25@1.40 | 1.25@1.40 | 1.20@1.25 |
| Mine-run..... | 1.15 | .80@.90 | 1.25@1.40 | 1.25@1.40 | 90@1.25 |
| Screenings..... | 1.00@1.05 | .80@.90 | 1.25@1.40 | 1.25@1.40 | 90@1.25 |

ST. LOUIS

Domestic and steam demand somewhat retarded. Screenings firm. Storing increases.

Mild weather has somewhat handicapped the movement of all sizes and there has been another accumulation in some districts. Franklin and Williamson County are moving freely; many orders have been booked ahead during the cold spell, thus enabling a steady operation of the mines with tracks clear.

The Montgomery County field is well supplied with large orders for storage coal, moving north, which is taking care of any free coal and giving steady working time. Mt. Olive and Staunton grades find a fairly ready sale for all sizes.

Intermediate and Standard have suffered, the soft weather taking the dealer entirely from the market as the coal purchased during the previous cold spell was delivered too late, owing to congestion at junction points. Standard lump and egg prices declined 15 to 20c. per ton. Nut and screenings held. Screenings from all districts continue in good demand with prices remaining firm.

Industrial storing is increasing and railroads have been large buyers in the market during the week.

Following are the quotations, per net ton, f.o.b. cars, mines:

| | Williamson and Franklin | Staunton Mt. Olive | Montgomery Co. | Intermediate | Standard |
|----------------------|-------------------------|--------------------|----------------|--------------|-------------|
| 8-in. lump..... | | | | \$1.35@1.50 | \$1.15@1.25 |
| 6-in. lump..... | \$1.60@1.75 | \$1.35@1.50 | \$1.35@1.50 | 1.35@1.50 | 1.15@1.25 |
| 3-in. lump..... | 1.50@1.65 | 1.25@1.35 | 1.35@1.50 | 1.35@1.50 | 1.15@1.25 |
| 2-in. lump..... | 1.40@1.50 | 1.25@1.35 | 1.25@1.35 | 1.25@1.35 | 1.15@1.25 |
| 1 1/2-in. lump..... | 1.40@1.50 | 1.25@1.35 | 1.20@1.35 | 1.20@1.35 | 1.15@1.25 |
| 6x3-in. egg..... | 1.60@1.65 | 1.35@1.50 | 1.35@1.50 | 1.35@1.50 | 1.15@1.25 |
| 6x2-in. egg..... | 1.40@1.50 | 1.20@1.35 | 1.20@1.35 | 1.20@1.35 | 1.15@1.25 |
| 6x1 1/2-in. egg..... | 1.40@1.50 | 1.20@1.35 | 1.20@1.35 | 1.20@1.35 | 1.15@1.25 |
| No. 1 nut..... | 1.25@1.40 | 1.25@1.40 | 1.25@1.40 | 1.25@1.40 | 1.00@1.15 |
| No. 2 nut..... | 1.25@1.40 | 1.00@1.15 | 1.00@1.15 | 1.00@1.15 | 1.00@1.15 |
| Mine run..... | 1.15@1.20 | 1.10@1.15 | 1.10@1.15 | 1.10@1.15 | 1.10@1.15 |
| Screenings..... | .85@1.00 | .75@.85 | .75@.85 | .75@.85 | .75@.85 |
| Washed | | | | | |
| No. 1 nut..... | 1.60@1.75 | 1.50@1.60 | 1.50@1.60 | 1.50@1.60 | 1.50@1.60 |
| No. 2 nut..... | 1.50@1.60 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 |
| No. 3 nut..... | 1.50@1.60 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 |
| No. 4 pea..... | 1.50@1.60 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 | 1.40@1.50 |
| No. 5 slack..... | .85@1.00 | .75@.85 | .75@.85 | .75@.85 | .75@.85 |

DULUTH

Storms delay shipments. Coal movement heavy. Orders accumulating.

The movement of coal to interior points is delayed by heavy snowstorms of such a violent character that in a number of instances dock operators closed down and allowed their men to go home. Hence there has been a large accumulation of orders, which promise to keep things lively for some time to come. The railroads have been somewhat hampered by the weather conditions and complaint is heard from retailers and dealers that shipments are delayed. Prices are very firm, and among the smokeless grades stocks are being rapidly depleted. Quotations are as follows, per short ton f.o.b. cars at Duluth docks:

| | Yough | Splint | Hock | Smokeless | Elkhorn |
|--------------------|--------|--------|--------|-----------|---------|
| Lump..... | \$3.40 | \$3.40 | \$3.40 | \$4.75 | \$3.75 |
| Dock run..... | 3.10 | 3.10 | 3.05 | 3.25 | 3.25 |
| Egg, stove and nut | 3.40 | 3.40 | 3.40 | 4.75 | 3.65 |
| Screenings..... | 2.40 | 2.40 | 2.25 | 2.75 | 2.55 |

The demand for anthracite continues good, the cold, stormy weather compelling householders to replenish stocks. Supplies appear to be ample, no complaint as to shortages of any of the various sizes being heard. Quotations per short ton f.o.b. cars, Duluth docks, are as follows: Nut, \$7.10; egg and stove, \$6.85; pea, \$5.55, and buckwheat, \$4.

I. C. C. DECISIONS

I. C. C. No. 4,872—(Fourth Section Applications Nos. 601 Et. Seq.) Rates on bituminous coal to Mississippi Valley Territory. Brownsville Cotton, Oil and Ice Co. vs. Louisville & Nashville R.R. Co.

1. Carriers authorized to continue rates on coal from mines in Illinois, Kentucky, Tennessee, and Alabama to Memphis, Tenn., Natchez, Miss., Baton Rouge, Bayou Sara, Plantation group, Kenner, and New Orleans, La., and group, Gulfport, Miss., and Mobile, Ala., lower than rates to intermediate points.

2. Carriers authorized to continue rates on coal from mines in Illinois and Kentucky to Greenville and Vicksburg, Miss., lower than rates to intermediate points.

3. Authority to continue rates on coal via indirect routes from mines in Illinois, Kentucky, Tennessee, and Alabama to junction and common points in Mississippi Valley territory lower than rates to intermediate points granted.

4. Authority to continue rates on coal from mines in Illinois and Kentucky to Bemis, Gibbs, Humboldt, Jackson, McKenzie, Milan, Paris, Union City, Martin, and Rives, Tenn., lower than rates to intermediate points denied.

5. Authority to continue rates via direct lines from Alabama mines to Aberdeen, Ackerman, Columbus, Ellisville, Enterprise, Hattiesburg, Holly Springs, Jackson, Laurel, Newton, Meridian, Starkville, Vicksburg, and West Point, Miss., and Grand Junction and Middleton, Tenn., lower than rates to intermediate points denied.

6. Reasonable maximum rates on bituminous coal from mines in Illinois, Kentucky, and Alabama to Dyersburg, Tenn., Grenada, Oxford, and Kosciusko, Miss., and other points prescribed.

Investigation and Suspension Docket No. 144, the Detroit Reconsigning Case and No. 7760 Detroit Coal Co. vs. Michigan Central Railroad Co.

The tariffs of respondents authorized, under certain circumstances, a charge of \$2 per car for reconsigning coal at Detroit, Mich., to points within the switching limits of that city, but the provisions of the tariff did not, as contended by the complainant, make the imposition of the charge conditional upon the terminal carriers having first given the consignee at Detroit notice that the car had arrived at Toledo, Ohio. Charges collected upon the shipments involved in the complaint not shown to have been unreasonable. Reparation denied and complaint dismissed.

I. C. C. No. 7791—Pit Gas Coal Co. vs. Pennsylvania R.R. Co. et al.

Present rate on coal from Besco, Penn., to Ashtabula Harbor, Ohio, and other Lake ports in the State of Ohio, when for transshipment by vessels on the Great Lakes to points beyond, found to be unreasonable to the extent that it exceeds 75c. per net ton. The southern boundary of the Pittsburgh district is changed to include Besco.

Investigation and Suspension Docket No. 627—Coal from Toluca, Ill.

Proposed cancellation of joint rates which would result in increased rates on coal from Toluca, Ill., to interstate points on the Chicago, Milwaukee & St. Paul Railway found not justified.

I. C. C. No. 52 (Ex parte). In the matter of filing with the Interstate Commerce Commission Divisions of joint rates applicable to railway fuel coal.

1. Rulings of the Commission relative to rates and divisions of rates on fuel coal received.

2. Commission deems it desirable that all carriers subject to its jurisdiction be required to file their divisions of joint rates applicable on railway fuel coal, in the transportation of which they participate, and that they be required further, when changes are made in such divisions, to file a statement of facts relied upon as justification for such changes. An appropriate general order will issue under the provisions of section 6.

I. C. C. No. 4792—Plymouth Coal Co. vs. Pennsylvania R.R. Co., et al. (Sub. No. 1) Plymouth Coal Co. vs. Delaware, Lackawanna & Western R.R. Co.

Upon complaint that rates applying upon anthracite coal is carloads from Plymouth and Luzerne, Penn., to South Amboy and Hoboken, N. J., f.o.b. vessels for transshipment are unreasonable; Held:

1. Reasonable rates for the future will be secured complainants by the order entered in Rates for Transportation of Anthracite Coal, 35 I. C. C., 220.

2. Question of reparation held in abeyance for determination in a supplemental report.

Coal Contracts Pending

The purpose of this department is to diffuse accurate information of prospective purchases and prices with a view to affording equal opportunity to all, promoting market stability and inculcating sound business principles in the coal trade.

Supplemental Notes

Under this heading additional or supplemental information regarding old contracts appears, together with the page number of the original notice.

- 1714—Detroit, Mich.**—Bids have been readvertised for on this contract (Vol. 8, p. 998), which provides for furnishing the Department of Public Works with coal of various kinds to be delivered in car and wagon lots at yards or barns during the year ending Jan. 31, 1917, as may be directed. Bidders will be required to file a certified check for \$800 with their bids. Address Comr. Geo. S. Finkle, Dept. of Public Works, Detroit, Mich. (No. 60, Vol. 7, pp. 189, 231.)
- 1749—Mt. Vernon, Ill.**—The Citizens Gas, Electric and Heating Co. advises that it is confining its purchases on this contract (Vol. 8, p. 1043), to the open market, and are not considering contracting. The contract involves between 400 and 500 tons of 3-in. screenings per month. Address Secy. H. A. Louwien, the Citizens Gas, Electric and Heating Co., Mt. Vernon, Ill.
- 1783—Atlantic City, N. J.**—Purchases of the kiln coal requirements on this contract (Vol. 8, p. 1088), covering the requirements of the Somers Brick Co., have been concluded, but the company is still in the market for two or three cars a week of boiler coal, which they are buying in the open market. At the present time they have a good supply. Address Purchasing Agent, Somers Brick Co., Atlantic City, N. J.
- 1953—East Chicago, Ind.**—This contract (p. 150), providing for the requirements of the U. S. Reduction Co. was erroneously noted as being in Illinois instead of Indiana in the previous notice. Address Purchasing Agent U. S. Reduction Co., East Chicago, Ind.
- 1954—Cleveland, Ohio**—The date for receiving bids on this contract (p. 150), covering the requirements for the Garbage Reduction Works, will be extended to noon, Feb. 2, instead of Jan. 21, as previously noted. Specifications and proposal forms may be had on application. Address Dir. Alex. Bernstein, 204 City Hall, Cleveland, Ohio. (No. 50, Vol. 7, p. 149.)
- 2010—Jersey City, N. J.**—The Board of Chosen Freeholders advise that no bids have been received on this contract (p. 194), which provides for furnishing the fuel requirements of the County Court House and jail during the year ending Nov. 30. Address Clk. Walter O'Mara, Board of Chosen Freeholders, County Court House, Jersey City, N. J.

New Business

Volume and page number in parentheses at the end of an item indicate where the previous announcement, bids and awards on that contract may be found.

- 2044—Chicago, Ill.**—The American Laundry Machinery Co. usually contracts for its annual fuel requirements, involving approximately 80 tons of Southern Illinois No. 1 nut coal per month on Mar. 1. Address Purchasing Agent, The American Laundry Machinery Co., Chicago, Ill.
- 2045—Portland, Me.**—The contract of the Portland Gas Light Co., involving approximately 30,000 tons of Penn gas, Westmoreland, or any other high grade three-quarter screened gas-producing coal, expires on Mar. 1. Shipments are made as required in about equal monthly proportions to the wharf at Portland, Me. Address C. H. Tenney & Co., 201 Devonshire St., Boston, Mass. (No. 11, Vol. 6, p. 854.)
- 2046—Cleveland, Ohio**—The Cleveland Furnace Co. usually contracts for its annual fuel requirements, amounting to between 400,000 and 500,000 tons of coking coal, some time during March. Deliveries are made by railroad at the rate of between 7,500 and 10,000 tons per week and the company has a storage capacity for 50,000 tons. Address Pres. D. T. Croxton, Cleveland Furnace Co., Rockefeller Bldg., Cleveland, Ohio.
- 2047—Dallas, Ga.**—The Dallas Hosiery Mills Co. usually contracts for its annual fuel requirements, involving approximately 800 tons of steam coal, some time in the spring. Deliveries are made by the Southern Railroad at the rate of 65 tons per month. Address Pur. Agt. F. A. Hoy, Dallas Hosiery Mills Co., Dallas, Ga.
- 2048—Chicago, Ill.**—The Lake Shore Sand Co. will contract about Mar. 1 for its annual fuel requirements, involving one car of Illinois or Indiana egg coal per week. Address Pur. Agt. C. H. Stebbins, Lake Shore Sand Co., 133 West Washington St., Chicago, Ill.
- 2049—Batavia, Ohio**—Bids have been received for furnishing the Board of Public Affairs with coal for use at the power plants during the ensuing year, George A. Kean & Bro. being the lowest bidder at \$2.35 per ton for mine-run coal delivered at the power plant. No announcement of an award has yet been made. Address Secy. Thomas Glancy, Board of Public Affairs, Batavia, Ohio. (Vol. 7, p. 628.)
- 2050—Ottawa, Ont., Can.**—Bids will be received at the Dept. of Public Works until 4 p.m., Feb. 15, for furnishing coal as may be required by the Departmental Dredging Plant in Manitoba during the fiscal year 1916-1917. Address Secy. R. C. Desrochers, Dept. of Public Works, Ottawa, Ont., Can.
- 2051—Chicago, Ill.**—The Chicago Bridge and Iron Works will contract about Mar. 1 for its annual fuel requirements, involving 45,000 tons of Illinois screenings. Address Pur. Agt. S. A. Boyer, Chicago Bridge and Iron Works, 332 South Michigan Ave., Chicago, Ill.
- 2052—Montpelier, Ohio**—Bids will be received some time during the spring for furnishing the fuel requirements of the Montpelier Municipal Plant, involving approximately 2,800 tons of West Virginia mine-run coal. It is understood that the business is not negotiated on competitive bids and the price is about \$2.75 per ton. Address City Clerk, Montpelier Municipal Government, Montpelier, Ohio.
- 2053—Connersville, Ind.**—L. M. Van Hart & Co. is in the market for approximately 2,500 tons of nut and slack coal, deliveries to be made at the rate of seven cars per week. Address L. M. Van Hart & Co., Connersville, Ind.
- 2054—Columbia, Ill.**—The Columbia Star Milling Co. usually contracts for its annual fuel requirements, involving approximately 2,000 tons of nut and slack coal, some time during March. Deliveries are made by railroad at the rate of 40 tons per week and the company has storage capacity for 60 tons. Address Pur. Agt. Geo. Schoening, Columbia Star Milling Co., Columbia, Ill.
- 2055—Franklin, Ohio**—The Franklin Board and Paper Co. is receiving bids for furnishing a 30-day supply of nut and slack coal amounting to approximately 1,500 tons. Deliveries are to be completed prior to Apr. 1. Address Secy. F. B. Zartman, Franklin Board and Paper Co., Franklin, Ohio. (Vol. 7, pp. 956, 1004.)
- 2056—Chicago, Ill.**—The Chicago, Rock Island & Pacific Railroad Co. is receiving bids on 400 to 500 cars of 1½-in. lump coal for storage purposes. Address Pur. Agt. D. B. Sebastian, Chicago, Rock Island & Pacific R.R., La Salle Street Station, Chicago, Ill.
- 2057—Forest City, N. C.**—The Florence Mills usually contracts for its annual fuel requirements, involving approximately 5,000 tons of Stonega mine-run coal, some time during the spring. Deliveries are made by railroad at the rate of approximately 100 tons per week, and the company has storage capacity for 200 tons. Address Pur. Agt. K. S. Tanner, The Florence Mills, Forest City, N. C.
- 2058—Detroit, Mich.**—Jules G. Hoffman is in the market for approximately 25,000 tons of mine-run coal, deliveries to be made in regular daily quantities between Feb. 1 and June 1. Address Jules G. Hoffman, Detroit, Mich.
- 2059—Columbus, Ohio.**—A. Simons & Son are negotiating for approximately 75,000 tons of nut and slack coal, for delivery during the period between Apr. 1 and Dec. 1. Address Sales Mgr. J. F. Russell, A. Simons & Son, Columbus, Ohio.
- 2060—Chicago, Ill.**—The Raymond Lead Co. will soon be in the market for their annual fuel requirements, involving approximately 2,000 tons of Carterville No. 4 washed coal, deliveries to be made in equal monthly proportions. Address Vice-Pres. Denniston, Raymond Lead Co., 735 S. Washtenaw Ave., Chicago, Ill.
- 2061—Darby, Penn.**—Verlender Brothers send out inquiries on its annual fuel contracts involving approximately 3,000 tons on Mar. 1, and conclude the business on Apr. 1. Deliv-

eries are made by B. & O. R.R. Address Purchasing Agent, Verlender Brothers, Darby, Penn.

2062—Chicago, Ill.—The John F. Jelke Co. will receive bids on its annual fuel contract, involving approximately 5,000 tons of screened nut coal for use at its plant some time during the month of March. Address Pur. Agt. King, The John F. Jelke Co., Polk St. and Washtenaw Ave., Chicago, Ill.

2063—Easton, Penn.—The Eastern Pennsylvania Power Co. send out inquiries on its annual fuel contract, involving approximately 40,000 tons of gas slack coal on Mar. 1, and conclude the business on Apr. 1. Address Pur. Agt. Cresson, Eastern Pennsylvania Power Co., Easton, Penn.

2064—Easton, Penn.—The Alpha Portland Cement Co. send out inquiries on its fuel contract on Mar. 1. Gas-slack coal is used. Address Pur. Agt. H. T. Wetzell, Alpha Portland Cement Co., Easton, Penn.

2065—Harrisburg, Penn.—The Lalance & Grosjeau Manufacturing Co. send out inquiries on its annual fuel contract, involving approximately 7,000 tons, on Mar. 1, and conclude the business on Apr. 1. Deliveries are made by Pennsylvania R.R. Address Pur. Agt. Jones, Lalance & Grosjeau Manufacturing Co., 299 Broadway, New York, N. Y.

2066—Harrisburg, Penn.—The Marie L. Grampner Brewery sends out inquiries on its annual fuel supply on Mar. 1, and conclude the business on Apr. 1. Deliveries are made by Pennsylvania R.R. Address Purchasing Agent, Marie L. Grampner Brewery, Harrisburg, Penn.

2067—Chicago, Ill.—The Hotel Bismarck, which is now buying coal in the open market, is receiving bids for a contract covering its annual fuel supply, involving approximately 1,055 tons. About 325 tons of Pocahontas mine-run and 730 tons of No. 3 washed nut will be required. Address Pur. Agt. Henning, Hotel Bismarck, 175 W. Randolph St. Chicago, Ill.

2068—Harrisburg, Penn.—The Central Pennsylvania Traction Co. usually send out inquiries on its annual fuel contract about Mar. 1 and conclude the business on July 1. Address Pur. Agt. O'Connell, Central Pennsylvania Traction Co., Harrisburg, Penn.

2069—Kennett Square, Penn.—The American Rood Machine Co. send out inquiries on its annual fuel contract, involving approximately 1,000 tons of coal on Mar. 1, and conclude the business on July 1. The company uses Clearfield coal. Address Pur. Agt. Withington, American Rood Machine Co., Kennett Square, Penn.

2070—Lancaster, Penn.—The Armstrong Cork Co. sends out inquiries on its annual fuel contract, involving approximately 16,000 tons of slack coal on Mar. 1, and concludes the business on Apr. 1. Deliveries are made by Philadelphia & Reading and Pennsylvania railroads. Address Purchasing Agent, the Armstrong Cork Co. (Linoleum Dept.), Lancaster, Penn.

2071—Chicago, Ill.—The Union Cold Storage and Warehouse Co. is receiving bids on its annual fuel contract, which expires on Mar. 31. The company requires approximately 5,000 tons of Franklin Co. Nos. 2 or 3 nut coal, and shipments are slightly heavier during the summer than in winter. Address Pur. Agt. E. A. Bertram, The Union Cold Storage and Warehouse Co., Railway Exchange Bldg., Chicago, Ill.

2072—Chicago, Ill.—The P. A. Starck Piano Co. will soon be in the market for its annual fuel contract, involving approximately 300 tons of Illinois screenings per month. Address Pur. Agt. P. A. Starck, the P. A. Starck Piano Co., 3859 S. Ashland Ave., Chicago, Ill.

2073—Pottstown, Penn.—The Pennsylvania Dye and Bleach Works, Inc., usually send out inquiries on its annual fuel requirements, involving about 1,200 tons on Mar. 1, and close the business on Apr. 1. Address Pur. Agt. Chas. Maderia, Pennsylvania Dye and Bleach Works, Inc., Pottstown, Penn.

2074—Pottstown, Penn.—The Pottstown I. C. S. Co. send out inquiries on its annual fuel contract on Mar. 1, and conclude the business on Apr. 1. The company consumes about 3,000 tons per annum. Address Pur. Agt. Snyder, The Pottstown I. C. S. Co., Pottstown, Penn.

2075—Royersford, Penn.—The National Underwear Co. usually contract for its annual fuel requirements, involving about 300 tons, on Mar. 1. Address Purchasing Agent, National Underwear Co., Royersford, Penn.

2076—Riverside, N. J.—The Keystone Watch Case Co. is now in the market for the fuel requirements of its central power plant, which furnishes power for the Riverside Metal Co. and the Keystone Watch Case Co. Address Purchasing Department, The Keystone Watch Case Co., Riverside, N. J.

2077—Spring City, Penn.—The Century Knitting Co. sends out inquiries on its annual fuel contract, involving approximately 800 tons on Mar. 1, and concludes the business about Apr. 1. Deliveries for the Spring City mill are made by way

of the Pennsylvania Railroad, and those for the Pottstown mill by way of the Philadelphia & Reading. Address George W. Reiff, Century Knitting Mills, Spring City, Penn.

2078—Spring City, Penn.—The Penn Shafting Co. contract for its annual fuel supply, involving about 1,000 tons on Apr. 1, inquiries being sent out on Mar. 1. Address Pur. Agt. Smith, Penn Shafting Co., Spring City, Penn.

2079—Swathmore, Penn.—The Victoria Plush Mills send out inquiries on its annual fuel contract, involving about 4,500 tons on Mar. 1, and concludes the business on Apr. 1. Address Pur. Agt. John Twiner, Victoria Plush Mills, Swathmore, Penn.

2080—Upland, Penn.—S. A. Crozier & Son contract for its annual fuel supply on Apr. 1, the inquiries being sent out on Mar. 1. Address Pur. Agt. Crozier, S. A. Crozier & Son, Upland, Penn.

2081—Chicago, Ill.—The Western Cold Storage Co. will soon receive bids covering its annual fuel requirements, involving approximately 12,000 tons of Franklin County Nos. 2 or 3 nut coal. Shipments are distributed throughout the year, though generally heavier in the summer time. Address Pur. Agt. E. A. Bertram, Western Cold Storage Company, Railway Exchange Building, Chicago, Ill.

2082—Wilmington, Del.—Bauer & Dougherty usually send out the inquiries on their annual fuel contract about Mar. 1, and conclude the business Apr. 1. Deliveries are made by Philadelphia & Reading and Pennsylvania R.R. Address Purchasing Agent, Bauer & Dougherty, Wilmington, Del.

2083—Chicago, Ill.—Sprague, Warner & Co. will soon be in the market for their annual fuel contracts, involving approximately 3,000 tons of Carterville or Franklin County 2-in. screenings. The contract will become effective Apr. 1, and deliveries will be in about equal monthly proportions. Address A. A. Sprague, Sprague, Warner & Co., Chicago, Ill.

2084—Allentown, Penn.—The Lehigh Valley Transit Co. usually send out inquiries on its annual fuel contract involving about 50,000 tons of coal on Feb. 1, and concludes the business on Apr. 1. Deliveries are made by Central R.R. of New Jersey. Address Pur. Agt. R. J. Riko, Allentown, Penn.

2085—Chicago, Ill.—The National Malleable Castings Co. will negotiate its annual fuel contract, involving approximately 2,000 tons of Franklin County No. 4 nut coal, some time during March. Address Pur. Agt. J. D. Hiatt, the National Malleable Castings Co., 25th and Rockwell St., Chicago, Ill.

2086—Chester, Penn.—The American Steel Hardware Co. send out inquiries on its annual fuel contract, involving approximately 5,500 tons about Mar. 1, and conclude the business on Apr. 1. Address Pur. Agt. I. Borris, American Steel Hardware Co., Chicago, Ill.

2087—Conshohocken, Penn.—The H. C. Jones Co. sends out inquiries on its annual fuel contract, involving approximately 5,000 tons of coal on Mar. 1, and concludes the business on Apr. 1. Deliveries are made by Philadelphia & Reading and Pennsylvania railroads. Address Purchasing Department, the H. C. Jones Co., Conshohocken, Penn.

2088—Clifton Heights, Penn.—The Thomas Kemp Manufacturing Co. usually send out inquiries on its annual fuel contract involving approximately 5,000 tons on Mar. 1, and concludes the business on Apr. 1. Address Purchasing Agent Thomas Kemp Manufacturing Co., Clifton Heights, Penn.

2089—Chicago, Ill.—James S. Kirk & Co. will contract about Mar. 1 for its annual fuel requirements, involving between 110 to 125 tons of Southern Illinois screenings per day. Address Pur. Agt. E. J. Volls, James S. Kirk & Co., 106 East Austin St., Chicago, Ill.

Contracts Awarded

Note—Successful bidders are noted in **bold face type**.

1592—Cincinnati, Ohio.—This contract (Vol. 8, p. 736), which provides for furnishing the Cincinnati, Milford & Loveland Traction Co. with coal has been awarded to the **Bell Coal and Mining Co.**, until Oct. 1 of the current year. The contract will be filled on 4-in. mine-run coal, and deliveries will be made at the rate of approximately two cars per week. Address Pur. Agt. A. C. Wenzel, The Cincinnati, Milford & Loveland Traction Co., Cincinnati, Ohio.

1615—Philadelphia, Penn.—This contract (Vol. 8, p. 786), involving a yearly tonnage of 2,550 tons of buckwheat coal for S. B. & B. W. Fleisher has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for three months ending Mar. 31, 1916. Address Purchasing Agent, S. B. & B. W. Fleisher, Manayunk, Philadelphia, Penn.

1841—Kansas City, Mo.—This contract (Vol. 8, p. 1090), which provides for furnishing the fuel requirements of the Ideal Laundry Co., has been awarded to the **Beatty Coal Co.**

at \$2.95 per ton. Address Purchasing Agent, the Ideal Laundry Co., Kansas City, Mo.

1844—Philadelphia, Penn.—This contract (Vol. 8, p. 1090), which provides for furnishing the fuel requirements of the Collins & Alkman Co. during the coming year, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the first quarter. Address Purchasing Agent, Collins & Alkman Co., Manayunk, Philadelphia, Penn.

1853—Jersey City, N. J.—This contract (p. 36) which provides for furnishing the Hudson County Board of Commissioners with approximately 2,500 gross tons of the best quality of pea coal, for use at the power house at Secaucus, N. J., has been awarded to **Behrens Brothers**, Paterson Plank Road, Secaucus, N. J., at \$4.19 per ton. Address Clk. John C. Sweeney, Hudson Co. Blvd. Comrs., Jersey City, N. J. (No. 93, Vol. 7, pp. 446, 488, 318.)

1866—Philadelphia, Penn.—This contract (Vol. 9, p. 106), calling for buckwheat coal for the Episcopal Hospital, has been awarded to the **Philadelphia & Reading Coal and Iron Co.** until Mar. 31, 1916. Address Superintendent, Episcopal Hospital, Front St. and Lehigh Ave., Philadelphia, Penn.

1867—International Falls, Minn.—This contract (p. 106), which provides for furnishing the Board of Commissioners with coal for use at the Court House, has been awarded to **S. E. Thompson & Son**, at \$5.20 per ton for screened lump coal. Address Audr. L. H. Slocum, International Falls, Minn.

1868—Philadelphia, Penn.—This contract (p. 106), calling for annual requirements of 1,000 tons of buckwheat coal for Wm. Sellers & Co., has been taken for the first quarter of the current year by the **Philadelphia & Reading Coal and Iron Co.** Address Purchasing Agent, Wm. Sellers & Co., 16th and Hamilton St., Philadelphia, Penn.

1870—Media, Penn.—This contract (Vol. 9, p. 107), calling for Lykens Valley buckwheat for the borough government, has been awarded for the first three months of the year to the **Philadelphia & Reading Coal and Iron Co.** Address Borough Clk. Edw. Minton, Media, Penn.

1877—Chicago, Ill.—This contract (p. 107), which provides for furnishing the F. J. Lewis Manufacturing Co. with its fuel requirements, involving approximately 4,000 tons per annum, has been awarded to the **Consumers Co.** on Central Illinois steam egg until Mar. 31. Address Pur. Agt. C. C. Bulger, the F. J. Lewis Manufacturing Co., 2513 South Robey St., Chicago, Ill.

1881—Philadelphia, Penn.—This contract (p. 107), covering annual requirements of 1,500 tons of pea coal for the Riehle Brothers Testing Machine Co., has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the first quarter of the present year. Address Purchasing Agent, Riehle Brothers Testing Machine Co., 9th and Master St., Philadelphia, Penn.

1884—Philadelphia, Penn.—This contract (Vol. 9, p. 107), calling for buckwheat coal for the Rebmann Real Estate Co., has been taken by the **Philadelphia & Reading Coal and Iron Co.** for the period ending Mar. 31, 1916. Address Treasurer, Rebmann Real Estate Co., 13th and Willow St., Philadelphia, Penn.

1885—St. Louis, Mo.—This contract (p. 107), which provides for furnishing the Mound City Ice and Cold Storage Co. with between 500 and 1,000 tons of screenings per month, has been awarded to the **Mt. Olive & Staunton Coal Co.**, on Mt. Olive 1½-in. screenings, at a price understood to be 60c. per net ton f.o.b. mines. Address Gen. Mgr., J. Garneau, The Mound City Ice and Cold Storage Co., 9th and Branch St., St. Louis, Mo.

1888—Wilmington, Del.—This contract (Vol. 9, p. 107), calling for anthracite steamboat and pea coal for E. I. du Pont de Nemours & Co., has been awarded to the **Philadelphia & Reading Coal and Iron Co.** for the quarter ending Mar. 31, 1916. Address Pur. Agt. J. B. Niles, E. I. du Pont de Nemours & Co., Wilmington, Del.

1891—Philadelphia, Penn.—This contract (p. 107), calling for annual requirements of 8,000 tons of buckwheat coal for the Acme Tea Co. has been taken for the first quarter of the present year by the **Philadelphia & Reading Coal and Iron Co.** Address Purchasing Agent, 8th and Willow St., Philadelphia, Penn.

2036—Lowell, Mass.—This contract (p. 234), which provides for furnishing the Centralville pumping station with approximately 300 tons of coal, has been awarded to **D. T. Sullivan**, who guaranteed to furnish coal having 14,700 B.t.u. at \$7.25 per ton, or 14,400 B.t.u. at \$6.90. The Horne Coal Co. bid \$6.75 with a guaranteed heat value of 14,000 B.t.u. and \$7.70 for 14,600 B.t.u., and Wilson & Co. bid \$7.99 on 14,750 B.t.u., and \$6.99 on a coal carrying no guarantee at all. Address Supply Department, City of Lowell, Mass.

Contract Notes

Kansas City, Mo.—The Rosilind Hotel Co. has awarded the contract for furnishing its annual fuel supply, involving about 90 tons of coal a month, to the **Katzmaier Coal Co.**

New Orleans, La.—The contract for supplying the New Orleans Fire Department with coal and coke during the current year, was awarded to the **Pittsburgh Coal and Coke Co.** at 45c. per barrel for coal and 30c. for coke.

Cleveland, Ohio.—The Cuyahoga Brick Shale Co. advises that they are now using gas instead of coal, as previously announced (Vol. 9, p. 194). Address Pur. Agt. R. J. Dawson, R. F. D. No. 1, Brooklyn Station, Cleveland, Ohio.

Orrville, Ohio.—The contract for furnishing the Orrville Water-Works with approximately 3,000 tons of coal has been awarded to the **Elmer-Miller Coal Co.**, Toledo, Ohio, on Buffalo Creek nut, pea and slack at a price reported to be \$1.85 per ton, delivered.

Fort Worth, Tex.—The Farmers and Mechanics Bank Bldg. has awarded a contract for 40 tons of coal to the **Tri-State Coal Co.**, at \$4.25 per ton, coal to be delivered during January. Address Agt. R. D. Owens, Room 207, Farmers and Mechanics Bank Bldg., Fort Worth, Tex.

Delphi, Ind.—The contract for furnishing the local Water-Works with about 7,000 tons of mine-run or nut and slack coal was awarded to the **Haugh Coal Co.** at \$1.90 for mine-run and \$1.70 for nut and slack. Address Agt. Talmar R. Arnold, City Water-Works, Delphi, Ind.

Ft. Worth, Tex.—The **Huffley Coal Co.** has been awarded a contract for furnishing the Wheat Building with 40 tons of Wilburton slack coal at \$2.80 per ton, delivered. The building requires about 150 tons per year. Address Temple, Dickinson & Modlin, Wheat Bldg., Fort Worth, Tex.

Belleville, Ill.—The contract for furnishing the local public schools with coal during the ensuing year, has been awarded to the **Pittsburgh Mining Co.**, at 6c. per bu. The schools require about \$1,500 worth of coal a year. Address Secy. C. H. G. Heinfeldt, Bd. of Edu., Belleville, Ill.

Philadelphia, Penn.—The contract for furnishing Smith, Kline & French Co. with about 2,500 tons of Highland buckwheat coal (Vol. 8, p. 960), has been awarded to the **Lehigh Valley Coal Sales Co.** for the first three months of the current year. Address Pur. Agt. W. G. McHenry, 35th and Poplar St., Philadelphia, Penn.

Wilkes-Barre, Penn.—The Wilkes-Barre Ry. Co. consume approximately 36,000 tons of No. 3 buckwheat coal per annum. The company has a storage capacity for 10,000 tons, and deliveries are made by railroad and wagon at the rate of 100 tons per day. Address Pur. Agt. T. A. Wright, Wilkes-Barre Ry. Co., 8 West Market St., Wilkes-Barre, Penn.

Louisville, Ky.—The contract for the Louisville Water-Works Co. (p. 151), involving about 15,000 tons of coal, was awarded to the **Continental Coal Corporation** on Jan. 8. The contract will be filled on 2½-in. nut and slack Straight Creek coal, and deliveries will be at the rate of about five cars per week. Address, Pur. Agt. C. S. Potter, Louisville Water Co., Louisville, Ky.

St. Louis, Mo.—The Chicago & Alton has been forced to suspend the storage of coal temporarily, due to the scarcity of this product. The severe weather, famine in cars and demand from the leading consumers who are storing fuel in anticipation of a strike on Apr. 1, has resulted in acute shortage. The Alton planned to store 110,000 tons, but so far has been able to secure but 30,000 tons.

St. Louis, Mo.—The Chicago, Rock Island & Pacific R.R. has contracted with the **Willis Coal and Mining Co.** to furnish 200 cars of 1½-in. lump coal for storage purposes, and with the other following named companies: **St. Louis & O'Fallon Coal Co.**, 800 cars; **Bickett Coal and Coke Co.**, 300 cars; **Miller Coal and Coke Co.**, 50 cars; **Bald Eagle Coal and Mining Co.**, 50 cars; **Senior Coal Co.**, 50 cars.

St. Louis, Mo.—The Terminal R.R. Association has concluded purchases of coal as follows: **Southern Coal, Coke and Mining Co.**, 34,000 tons of Intermediate or Standard 2-in. lump coal, to be delivered during February and March, at a price understood to be \$1.52½ per ton, f.o.b. cars E. St. Louis, Ill.; **Maguire Coal Co.**, 6,000 tons of Standard 2-in. lump, same delivery and price understood to be \$1.47½ per ton. The Association has issued a request for further bids on 40,000 tons of 2-in. screened lump for the same delivery, coal to be loaded in flat-bottom equipment. Address Pur. Agt. J. E. Williams, Jr., the Terminal R.R. Association, Union Station, St. Louis, Mo. (Vol. 8, p. 959.)